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NURSING IN DISEASES OF CHILDREN

NURSING IN DISEASES OF CHILDREN

BY
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WITH 72 ILLUSTRATIONS

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A GOOD NURSE IS ONE WHO CAN GUARD
HER OWN HEALTH AND TAKE CARE
OF HER PATIENT AT THE SAME TIME



PREFACE

Pediatrics, no less than the rest of scientific medicine, has been making tremendous strides within the last few decades and the education of trained nurses has been keeping pace with this progress.

In my lectures to nurses on pediatrics during the last twenty years or so I have often felt the want of a textbook for nurses and I, therefore, welcomed the request of the publishers of this volume that I should prepare such a book. I only wish that they would have permitted me a little more time in its writing and I shall have to beg the indulgence of my readers for the shortcomings it may possess.

This being a textbook for nurses and not for the medical student, I have, so far as possible, omitted all reference to points of diagnosis and of treatment, both duties solely of the physician.

In its place I have endeavored to write concerning things which the nurse will require in her work and to develop in her the powers of observation.

In trying to explain some of the disturbances in the health of the child I have been confronted with diametrically opposite theories. I have, therefore, adopted those which seemed to me to be most reasonable rather than to confuse the mind of the reader by giving too much.

What I bring upon the care and nursing of the child is based upon close unto a quarter of a century of medical practice, and upon the study of pediatrics in some of the largest institutions of learning both here and

abroad. I have attempted to give only what I know from my own experience to be good.

In the preparation of a textbook like this an author must quite naturally consult the literature to a certain extent to refresh his own memory on certain points, and perhaps some of the authors of the books consulted by me will find many of their ideas incorporated in these pages. I shall not acknowledge my indebtedness to them individually, but, I herewith thank them one and all.

The chapter on "The Clothing of Infants" has been kindly contributed by Miss M. J. Robertson, R. N., superintendent of the German Deaconess Hospital, Buffalo, N. Y.; that on "The Public Health Nursing of Children," by Mrs. A. L. Hansen, R. N., Superintendent of the District Nursing Association of Buffalo, N. Y.; and that on "Mental Hygiene of Children," by my good friend H. G. Matzinger, M.D., also of Buffalo, N. Y. To these I wish to express here my sincerest thanks for their cooperation.

My gratitude is also extended to all those of my friends who have kindly assisted me in many ways.

CARL G. LEO-WOLF.

Buffalo, New York.

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NURSING IN DISEASES OF CHILDREN

NURSING IN DISEASES OF CHILDREN

CHAPTER I

INTRODUCTION

First of all let me explain what is meant by the word "pediatrics," of which this book will treat.

It is composed of two Greek words, namely "pais, genitive paidos," the child, and "iatrike," the science or art of healing. Its meaning is, therefore, the "science of healing children."

Unfortunately it is spelled nowadays in the same way as the Latin word for foot "pes, genitive pedis" and this has led to many a misunderstanding.

Take for instance "orthopedics." This is not the science of straightening feet but the "science of straightening children."

One of the stumblingblocks interfering with a clear understanding of some of the basic facts in pediatrics is the difficulty the pupil-nurse has with the metric system of weights and measures. This system is of the greatest importance, not only because it has been accepted as the standard in the sciences, such as chemistry and physics, but, also, on account of the ease with which percentages can be figured by it and in the elimination of fractions with varying denominators, substituting therefore the decimals.

As far as the scientific world is concerned the metric

system is one of the greatest achievements of the French revolution near the end of the eighteenth century and, also, one of the most lasting. It has been accepted by most of the civilized world, with the exception of the English-speaking nations; but even in these countries it is slowly making its way and will, undoubtedly, be universally accepted within a comparatively short time.

It has as its basis for measuring distances the meter (from the Greek "metron," the measure) which is the tenth-millionth part of the length of a quadrant of the meridian of the earth measured between the equator and the pole. It is applied as well to superficial and solid measures; taking for the unit of the former the square of the decuple, and for that of the latter the cube of the tenth part of the meter. This is at the same time the measuring unit of weight, being the quantity of distilled water at 4° C. equal in bulk to this same cube. The multiples and submultiples of each kind of measure, whether of weight, capacity, surface, or length, are always taken in the decimal or decouple proportion.

The decuples are expressed by prefixing the Greek word for ten, one hundred, one thousand, the decimals by prefixing the Latin word; thus taking the meter as the unit of length we will have:

1 decameter	=	10 meters	1 decimeter	=	$1/10$ meter
1 hectameter	=	100 meters	1 centimeter	=	$1/100$ meter
1 kilometer	=	1000 meters	1 millimeter	=	$1/1000$ meter

The unit of capacity is the litre—one cubic decimeter of water at 4° C., and it thus contains one thousand cubic centimeters.

The unit of weight is the gram, which is the weight of one cubic centimeter of water at 4° C. We will thus have:

1 decagram	=	10 grams	1 decigram	=	1/10 gram
1 hectogram	=	100 grams	1 centigram	=	1/100 gram
1 kilogram	=	1000 grams	1 milligram	=	1/1000 gram

Let us now compare these metric or decimal measures with those still employed in this country, and we will find the measures of length to be:

1 inch	=	2.5 centimeters
1 foot	=	30.0 centimeters
1 yard	=	90.0 centimeters
3½ feet	=	100.0 centimeters = one meter

The measures of capacity are approximately:

1 minim	=	.06 cubic centimeters
1 fluid dram	=	4.0 cubic centimeters
1 fluid ounce	=	30.0 cubic centimeters
1 pint	=	450.0 cubic centimeters
1 quart	=	900.0 cubic centimeters
1 medicine dropperful	=	15 minimis = 1 c.e.
1 coffeeespoonful	=	30 minimis = 2 c.e.
1 teaspoonful	=	1 dram = 4 c.e.
1 dessertspoonful	=	2 drams = 8 c.e.
1 tablespoonful	=	½ ounce = 15 c.e.

The measures of weight are approximately:

1/60 grain	=	.001 gram = 1 milligram
1/6 grain	=	.01 gram = 10 milligrams
1 grain	=	.06 gram = 60 milligrams
15 grains	=	1.0 gram
60 grains = 1 dram	=	4.0 grams
1/2 ounce	=	15.0 grams
1 ounce	=	30.0 grams
1 pound	=	450.0 grams
2½ pounds	=	1000.0 grams = 1 kilogram

Of the articles mostly used in infant feeding we find the following measures to be most serviceable:

Malt soup extract =

2 scant tablespoonfuls = 1 oz. by weight = 30.0 grams

Cane sugar =

2 level tablespoonfuls = 1 oz. by weight = 30.0 grams

Milk sugar =

3 level tablespoonfuls = 1 oz. by weight = 30.0 grams

Dextro-maltose =

4 level tablespoonfuls = 1 oz. by weight = 30.0 grams

Flour =

4 level tablespoonfuls = 1 oz. by weight = 30.0 grams

An easy way to figure percentages is this:

5 grains to the ounce = 1% = .3 : 30.0 grams

15 grains to the ounce = 3% = 1.0 : 30.0 grams

In the metric system the percentages are given by moving the point two figures to the left.

The thermometer scale empirically devised by the Hollander Fahrenheit and which is still in use in this country, in Great Britain, and in Holland, is being displaced, at least so far as scientific data are concerned by the decimal scale, the so-called "centigrade" scale, in which the freezing point of water or the temperature of melting snow is taken as zero and the boiling point of water as 100. Thus we find in comparing the scales of the Fahrenheit and the centigrade thermometers that the 100 degrees of the latter correspond to 180 degrees of the former, and that therefore 5 degrees of centigrade are equal to 9 degrees of Fahrenheit. We must also remember that the zero of centigrade corresponds to 32° F., so that in translating Fahrenheit into centigrade we must first subtract 32 from the degrees Fahrenheit we intend to translate, and again that in translating centigrade into Fahrenheit we must add 32 to our result. As an example:

$$98.6 \text{ F.} = \frac{98.6 - 32}{9} \times 5 = \frac{66.6}{9} \times 5 = 7.4 \times 5 = 37 \text{ C.}$$

$$37.0 \text{ C.} = \frac{37}{5} \times 9 + 32 = 7.4 \times 9 + 32 = 66.6 + 32 = 98.6 \text{ F.}$$

Another point which seems to cause some difficulty is the elements composing our food and their caloric values.

The food of the animal body, and, therefore, of all of us, consists first, and most important, of oxygen which

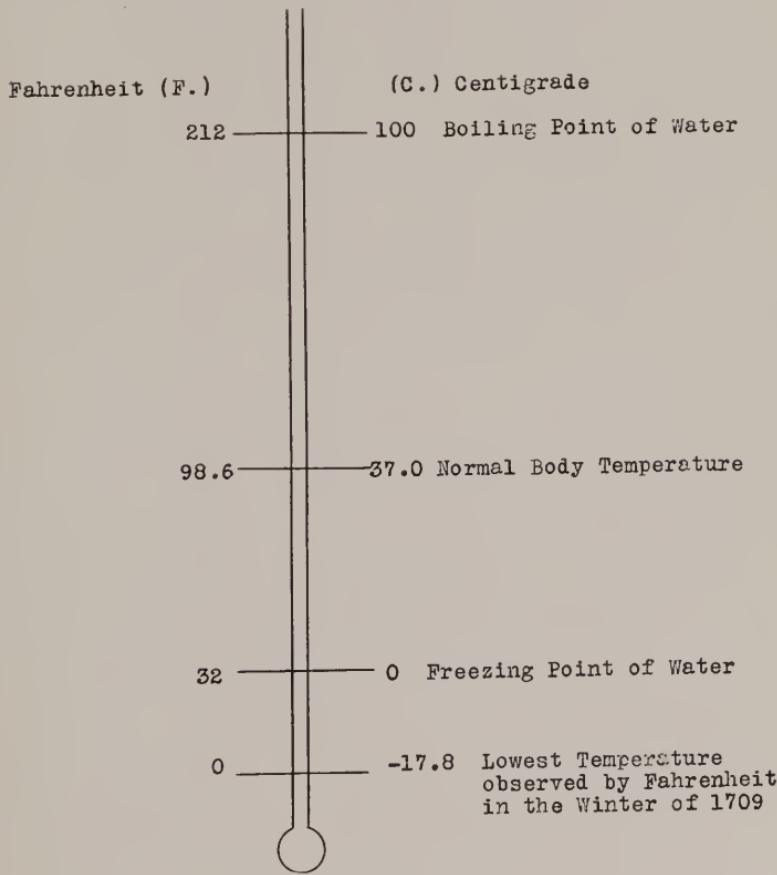


Fig. 1.—Thermometer scales.

is taken into the lungs and without which life can be maintained for comparatively few seconds only.

Next in importance is water, this has no caloric value,

but it is so essential for keeping up the functions of the body that a sudden considerable loss of it without our administering it by some method or other is sufficient to cause death from the drying out of the body. This must be kept in mind especially in the digestive disturbances of infancy, and all considerable losses of water through diarrhea, vomiting, and perspiration must be made up at once by the giving of water. This is done, most conveniently by the natural passage through the mouth, or by the use of the stomach tube, so-called "gavage." Should vomiting make the retention of this water impossible then it should be given through the rectum; if the water thus given should not be retained, then it must be administered hypodermically or intravenously, when it will surely be utilized. It must be remembered that even a small baby can live for days without food as long as it gets sufficient water; that is three ounces to each pound of its weight.

The salts also form an important element in the food. They have no caloric value but they are indispensable for life and for the growth, especially of the bones. They are taken up in the different foods and a deficiency in these as well as an insufficient retention will cause diseases. The salts form the ash, the inorganic mineral residue left after the organic parts of the food have been destroyed by heat.

Some of the salts of the body are continuously discharged in the urine and feces and also in the perspiration and this loss has to be made up by their ingestion, and further a surplus must be given to the child to insure its growth. These important minerals are the salts of calcium, magnesia, sodium, potassium, iron, chlorine, and phosphorus.

The elements of the food which possess a caloric value,

that are necessary as fuel in the body are the proteins, the carbohydrates and fat.

The value of any material as fuel is expressed in calories. A (large) calory is the amount of heat required to raise the temperature of one liter of distilled water one degree centigrade; thus, proteins and carbohydrates contain 4.1 calories in each gram, that means that one gram of either is sufficient to raise the temperature of one liter of distilled water four and one-tenth degrees centigrade or to raise the temperature of four and one-tenth liters of distilled water one degree centigrade; the caloric value of fat is 9.3 calories for each gram of fat, or more than twice that of either proteins or carbohydrates.

For example, the caloric value of cow's milk is in round figures 700 calories to the liter; for the sake of convenience we usually say, though this is not quite exact, but near enough for everyday use, that cow's milk contains 4 per cent each of protein, carbohydrates and fat, this would give

Proteins	$40 \text{ grams} \times 4.1 = 164 \text{ calories}$
Carbohydrates	$40 \text{ grams} \times 4.1 = 164 \text{ calories}$
Fat	$40 \text{ grams} \times 9.3 = 372 \text{ calories}$
<hr/>	
700 calories	

The proteins, the nitrogenous foods, are many and vary considerably, those contained in milk are casein and lactalbumin, of these the casein forms tough hard curds while the albumin is dissolved in the whey and forms white curds. The proteins are mainly used in the building up of the body and in growth, but they may also serve as fuel.

The carbohydrates are the sugars and starches, their constant components being atoms of carbon and hydro-

gen, from which these substances derive their name of carbohydrates; in the act of digestion the starches must be transformed into sugar before they can be assimilated. This can also be done before feeding outside of the body by transforming the starches into maltose, malt-sugar, by dextrinizing the cooked starch with an active preparation of malt, one containing a considerable amount of diastase, or by baking, as in the oldfashioned flour-ball.

The sugars in the foods are milk sugar which is found in mother's milk as well as in cow's milk, cane sugar and malt sugar. Though milk sugar is a natural ingredient of milk it is not well borne by babies when added to their food; they digest cane sugar, the ordinary granulated sugar, much better; malt sugar is the easiest digested by babies.

The carbohydrates are used in the system as fuel, they are readily burned up, the end-product being carbonic acid, and they are used by the body to maintain its temperature.

Two different carbohydrates can be digested much better when added to the artificial food of babies and this explains the success of the addition of gruels and another sugar besides milk sugar which is already present in the milk.

The fats in the food have a high fuel value, they are stored up in the body for use in time of need and under the skin as a protection of the body against the loss of heat.

In the milk, the fat is present in the form of cream, which is a suspension of fat globules in the watery liquid represented by the milk. In making butter the fat is emulsified, that is the relations of the fat to the water are so changed that we now have globules of water surrounded by fat.

Other forms of fat used as food are the different oils and animal fats.

In digestion the fat globules are absorbed as such. They go through the intestinal mucosa and then the fat is split up into glycerin, which is an alcohol, and can easily be burned up, and into fatty acids. If a surplus of fat should be given to a baby it must be eliminated in the bowel; it is here split into glycerin and fatty acids, these latter can not be excreted as such but have to combine with a salt, calcium phosphate, thus forming a soap. It will thus be seen that too much fat in the food for babies is very liable to deprive the system of a considerable part of the calcium phosphate which is needed in the building up of the bone.

A very important matter in the care and nursing of babies as well as of older children is the keeping of charts.

These charts, when kept properly can give the initiated at one glance a clear survey of the progress of the child, be it in sickness or in health. Unfortunately very few are the charts which are kept as they should be and which are really intelligible.

On a chart we represent graphically the changes in the relation of the clinical phenomena we want to record, be they temperature, pulse, respiration, weight, amount of food taken, caloric value of food, or height, to a given and unchanging unit of time, be this hour or hours, days, weeks, months or years. In order to make a chart we take a sheet of paper plotted in squares. On this the vertical lines denote the interval of time intended to elapse between the taking of the records, and the horizontal lines indicate the changes in the condition we want to show. The important point in charting, and the one which indicates if a chart is good or not, is that

the intervals in time, that is the unit of time as indicated by the first two vertical lines, should remain identical all through the chart; needless to say that the same holds good also for the spaces between the horizontal

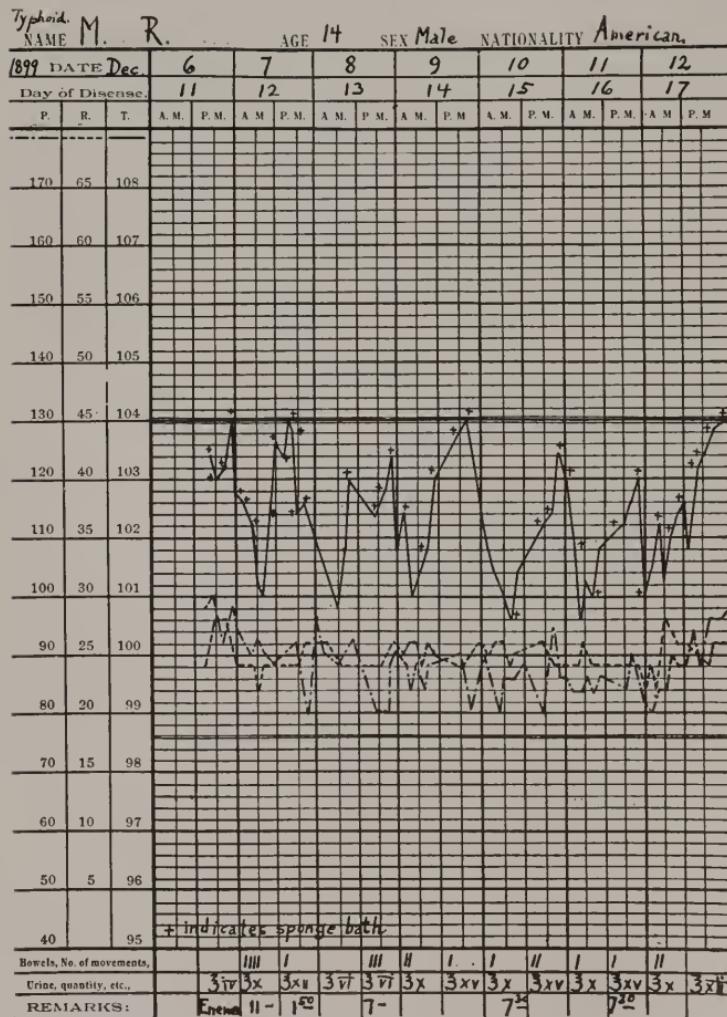


Fig. 2.—Chart indicating different time intervals.

lines. On such a chart we indicate by a dot the height of the clinical phenomenon to be recorded at the time we begin the chart where the first vertical line crosses that horizontal one, another dot on the crossing of the lines denoting the next record and so on, and then we unite

NAME	AGE												SEX				NATIONALITY										
	DATE			Day of Disease.				A.M.				P.M.				A.M.				P.M.				A.M.			
	P.	R.	T.																								
170	65	108																									
160	60	107																									
150	55	106																									
140	50	105																									
130	45	104																									
120	40	103																									
110	35	102																									
100	30	101																									
90	25	100																									
80	20	99																									
70	15	98																									
60	10	97																									
50	5	96																									
40		95																									
Bowels, No. of movements,																											
Urine, quantity, etc.,																											
REMARKS:																											

Fig. 3.—Chart divided into six-hour intervals.

these dots with the succeeding one thus plotting a curve.

It is not necessary to take the records at the same intervals of time as long as we indicate this on the chart by jumping over the corresponding number of vertical

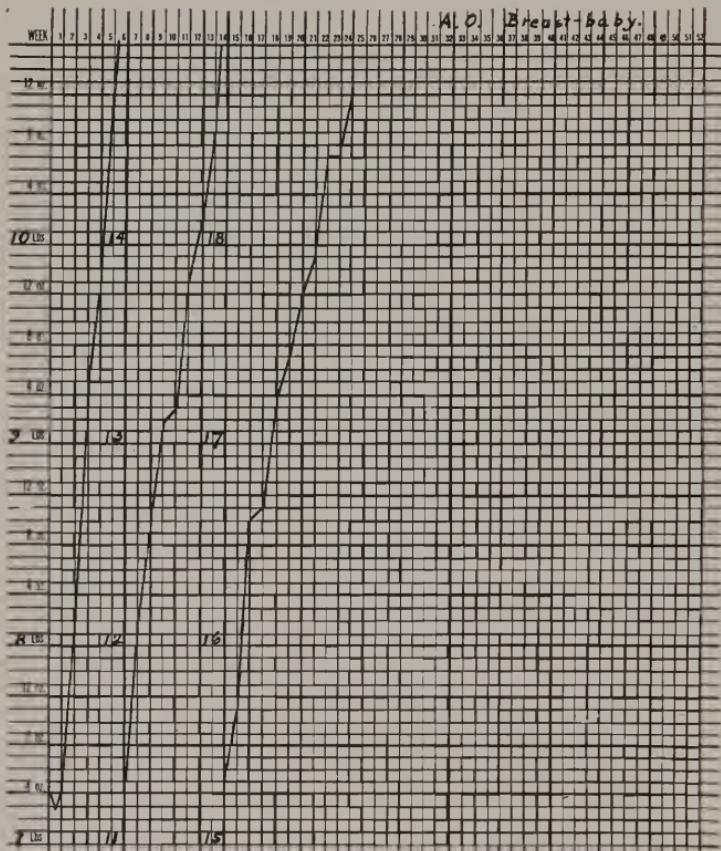


Fig. 4.—Weight chart.

lines. Let us say, for instance, that during the critical stage of a case of typhoid fever the temperature was taken every two hours and the physician had told the nurse to let the patient sleep all night without disturb-

ing him. If the patient sleeps six hours then the nurse should put down the temperature at the third vertical line after the one before the patient went to sleep. If the physician should decide that it was sufficient to take the temperatures now at four hour intervals then the

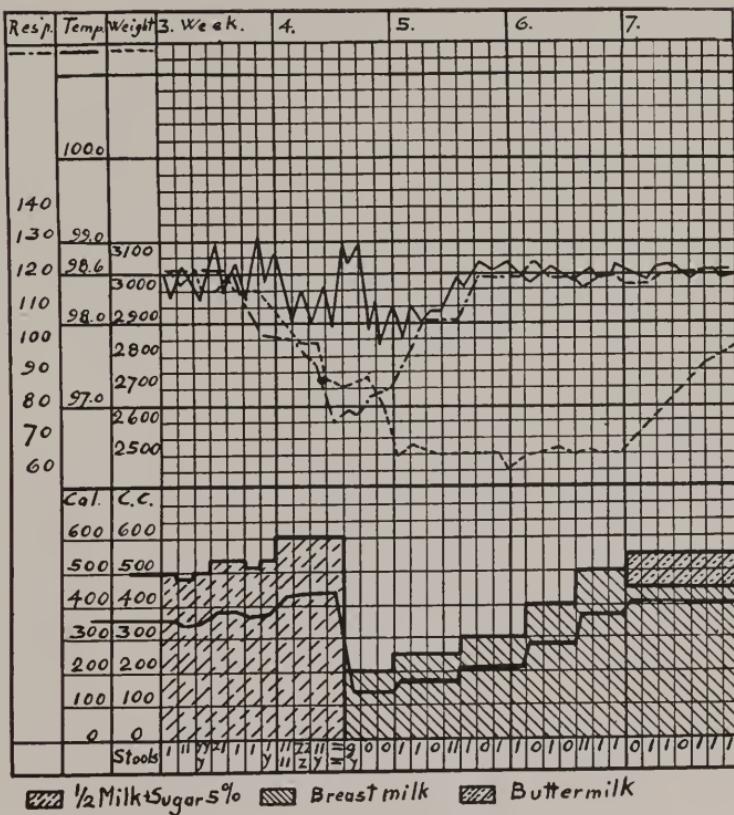


Fig. 5.—Chart in dotted and broken lines.

nurse should make the dots on every second vertical line. (Fig. 2.)

With some experience the nurse may find it even more convenient to have only the lines indicating the hours

of six and twelve of the morning and evening and to show the exact hour at which the record was taken by the proper spacing between these, as indicated on the accompanying chart which I have used now for more than twenty years and which nurses find very easy to keep. (Fig. 3.)

On such a chart only one record may be kept in the

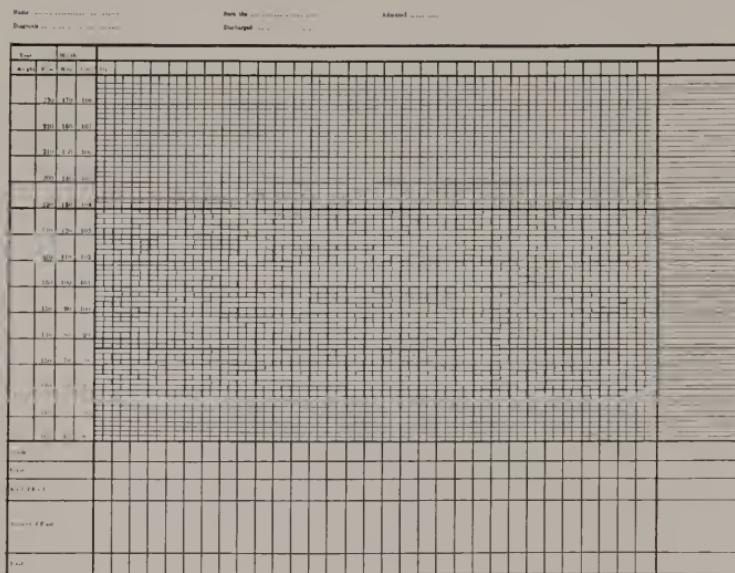


Fig. 6.—Monthly chart.

form of a curve, as for instance the weight of a baby (Fig. 4), or all the different clinical data may be so shown on the same charts, by marking the curves in different colors (Fig. 5), or by dotted and broken lines.

We can also write in any further data, such as the number and quality of the stools, the kind of food given, the medicines, the baths for reducing high temperatures, any prominent clinical symptoms, etc., so that the chart

will take the place of the bedside record which, by the way, I have found to be, as a rule, a most uninteresting document.

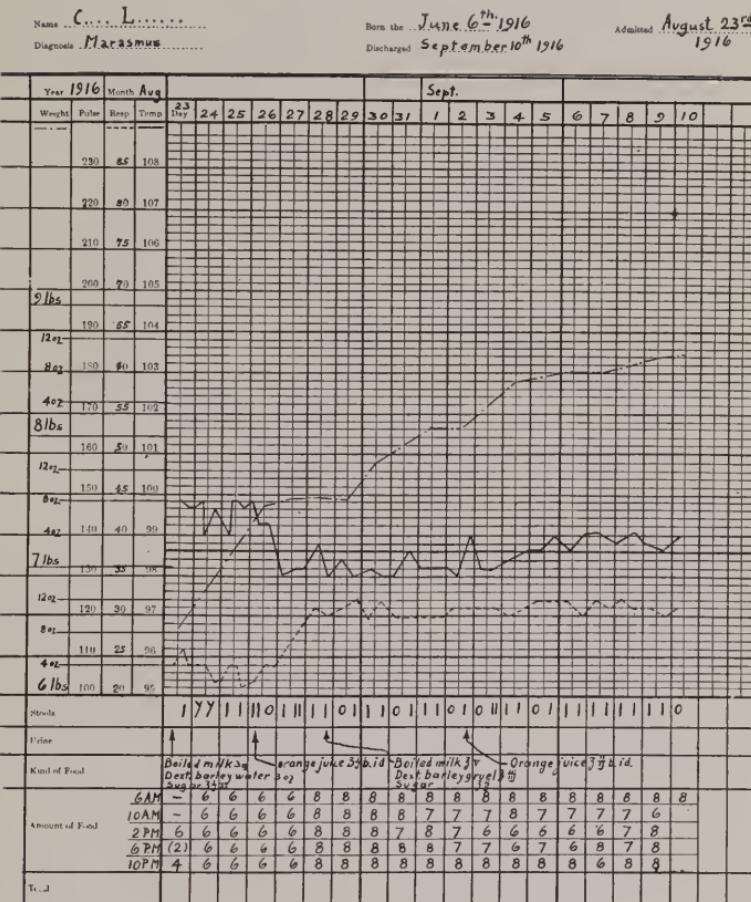


Fig. 7.—Chart indicating quality of stools.

Different forms of charts may be more convenient for different cases. Thus the chart pictured in Fig. 3 is one especially adapted for the infectious diseases, each sheet

being the record of one week. Another chart (Fig. 6) is one I made and used successfully in a large infant home, each sheet being the record of one month; on

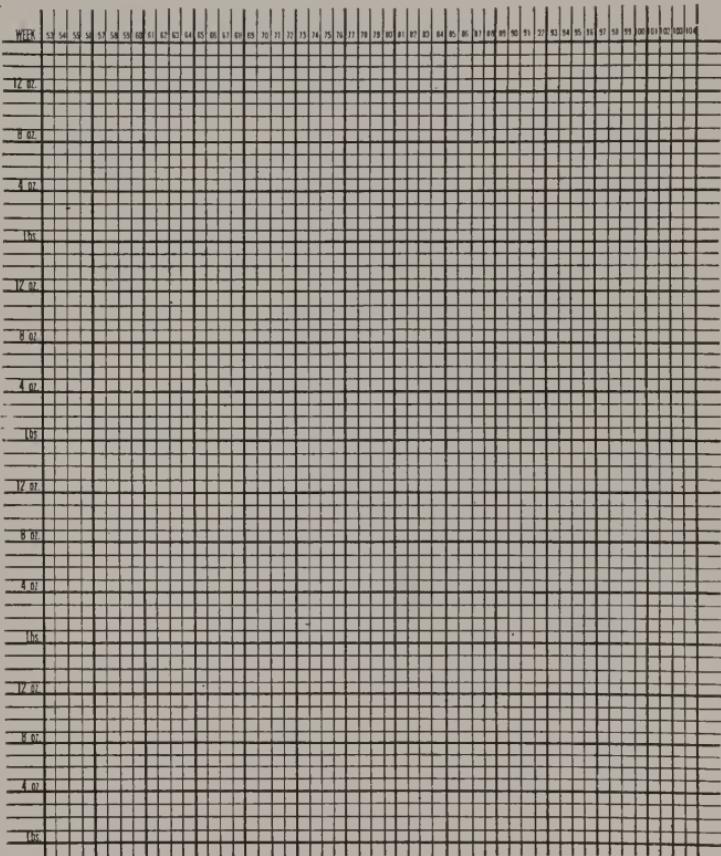


Fig. 8.—Infant-welfare chart.

these the quality of the stools is indicated as well (Fig. 7) by using different signs for each kind of stool as follows:

No stool	O
Normal stool	I
Green smooth stool	g
Pasty stool	/
Thin, pasty stool with mucus	Y
Uneven separated stool	Z
Uneven separated stool with mucus	'Z
Loose stool	-
Watery stool	~~
Bloody stool	s
Clayey stool	□

The quality of the food may be indicated by filling in the spaces at the bottom of the chart in different colors or by hatching and counterhatching for each kind of food each square indicating in half ounces, or 10 c.c., the amount ordered, while a curve indicates the amount taken by the baby as in Fig. 5.

Another chart is one that I devised and found very useful in keeping record of the weight of babies in one of the infant-welfare stations with which I was connected (Fig. 8).

Charts will be used extensively in this book because they tell the story of a case and the disease better than pages of explanation and also to teach the nurse the intelligent use of them, and to acquaint her with the reading of this convenient form of scientific record.

Quiz

What is meant by Pediatrics?

What is the meter?

What is a decameter, hectameter, kilometer, decimeter, centimeter, millimeter?

What is a liter?

What is a gram?

What is a decagram, hectagram, kilogram, decigram, centigram, milligram?

- How many centimeters make one inch?
- How many decimeters make one foot?
- How many centimeters make one yard?
- How many inches make one meter?
- How many cubic centimeters make one minim?
- How many cubic centimeters make one fluid dram?
- How many cubic centimeters make one fluid ounce?
- How many cubic centimeters make one pint?
- How many cubic centimeters make one quart?
- How much is one medicine dropperful?
- How much is one coffeeespoonful?
- How much is one teaspoonful?
- How much is one tablespoonful?
- How much is $\frac{1}{60}$ grain?
- How much is $\frac{1}{6}$ grain?
- How much is 1 grain?
- How many grains has 1 gram?
- How many grains make 4.0 grams?
- How many pounds make 1 kg.?
- How many tablespoonsfuls make 30.0 grams of: malt soup extract, cane sugar, milk sugar, dextri-maltose, flour?
- How many grains of sugar will make of eight ounces of food a three per cent solution?
- How much sugar will you require to make a three per cent solution of 180.0 c.e.?
- How many degrees Fahrenheit equal 40° C.
- How many degrees centigrade equal 155° F.?
- Which is the most important element of food?
- Which is the next important element of the food?
- Which are the methods by which you can administer water?
- What is the ash?
- Which are the most important minerals for the body?
- What is meant by a calory?
- Which are the elements of the food and what is their caloric value?
- How many calories are contained in 1 liter of cow's milk?
- What are proteins and which is their purpose in the food?
- What are the carbohydrates and which is their purpose in the food?

Which sugars do we use in infant-feeding?

Which fats do we use in food and what is their purpose?

Why is too much fat bad in infant-feeding?

What is meant by a chart?

What can you indicate on a chart?

Which is the most important point in keeping a chart?

How may you indicate on a chart the amount of food given to
a baby?

CHAPTER II

PHYSIOLOGY AND GENERAL CONSIDERATION OF THE CHILD

The Newborn

The average weight of the normal mature child immediately after birth is for boys 3,250 grams ($7\frac{1}{4}$ pounds), for girls 3,000 grams (7 pounds). The normal weight may vary between 2,600 grams and 4,300 grams ($5\frac{3}{4}$ and $9\frac{1}{2}$ lb.) ; heavier babies are rarely born alive and the stories of 11-pound babies or even heavier ones which we hear so often may be relegated to the province of myths or are due to angler's scales.

Premature babies weigh less according to the stage of intrauterine development, that is, the time of gestation, at which they were born; but we must not forget that because a baby was born at term it is not necessarily mature; and we must, therefore, differentiate between premature and immature babies, though they will be similar so far as their physiologic functions are concerned.

The normal newborn loses in weight during the first two to four days of extrauterine life. The minimum weight is usually reached on the third or fourth day, and the loss amounts to 150 to 300 grams, (5 to 10 oz.) This loss may be determined to some extent by the time after birth at which the cord was tied, that is the amount of maternal blood we allow to enter the child's body after birth. Also by the technic of feeding during the first few days; but, it is principally due to the physiological

fact that the newborn excretes more during these days than it takes in. The amount of this loss has been determined by one observer as follows:

DAY	FOOD	LOSSES			LUNGS AND	WEIGHT CHANGES
		MILK	URINE	STOOLS	SKIN	
1st	10 gm.	48 c.c.	51 gm. mec.	98 gm.	197 gm.	-187 gm.
2nd	91 "	53 "	26 gm. mec.	79 "	158 "	- 67 "
3rd	247 "	172 "	3 gm. fec.	85 "	260 "	- 13 "
4th	337 "	226 "	3 gm. fec.	92 "	321 "	+ 16 "

Thus we see that the loss is due principally to the amount of water given off through the skin and lungs, the so-called insensible perspiration, but the metabolism breaks down solid substances of the body as well, consisting mostly in fat and glycogen, also some protein.

A slight desire for food on the part of the newborn is quite as physiologic as is the loss, and there is, therefore, no indication for forcing food upon the newborn, except when it should obtain excessive proportions or should be prolonged beyond the fourth day, when it could no longer be regarded as physiological.

The weight of the newborn after the minimum has been reached depends upon the amount of nourishment it takes, especially the water in the food, as the body of the newborn retains water with great avidity so that it may gain in weight even on water alone; individual differences may, however, be observed in the energy of growth and in the power to retain water on the part of the newborn. Slight disturbances of its health may also affect the weight.

From the minimum the weight usually rises steadily to reach the weight at birth on or about the tenth day, but in some babies it may remain stationary for a few days and not be up to the weight at birth until the

second or third week. A second considerable loss in weight can not be considered as physiologic.

The length of the mature newborn is from 45 to 54 cm. (18 to 21 $\frac{3}{4}$ inches). Its average is 50 cm. (20 inches).

The intrauterine shape of the skull is ovoid, but it is changed through configuration in its passage through

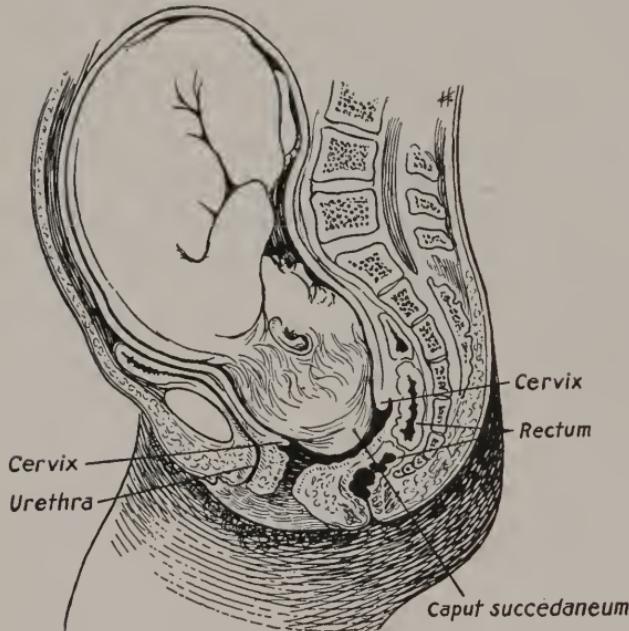


Fig. 9.—Formation of caput succedaneum.

the birth canal; the amount of configuration depends upon the disproportion between the head and the maternal parts, the hardness of the skull, and the intensity of the labor pains. It is made possible by the elasticity and flexibility of the bones of the skull and their movability in the sutures.

After birth in head presentations we notice as a rule

a swelling on the presenting part of the head, the so-called caput succedaneum; this forms after the amniotic fluid has escaped, when the part presenting in the cervix (Fig. 9) is under negative pressure, the cervix preventing the return of the blood to this part; it consists in a serous effusion with small hemorrhages between the scalp and the periosteum (Fig. 10), it is not confined

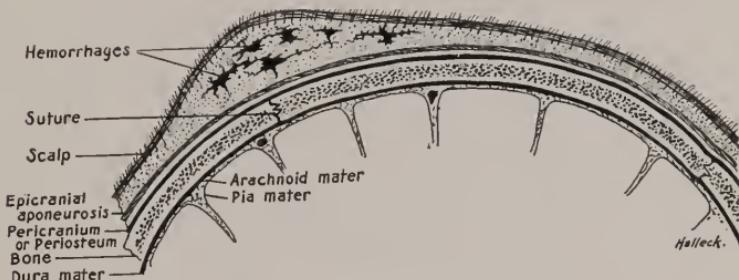


Fig. 10.—Caput succedaneum.

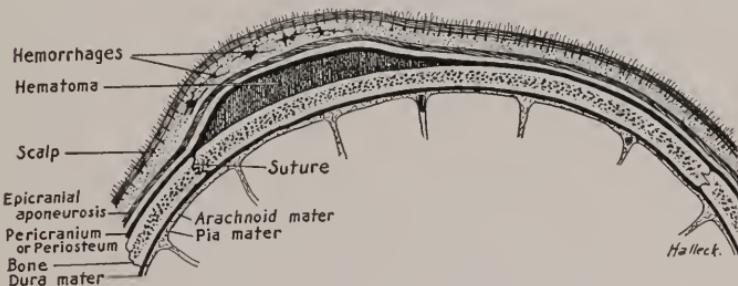


Fig. 11.—Cephalhematoma.

by the sutures between the bones of the skull, nor does it enlarge after birth, but begins to lessen after the first day of life, its size varies in accordance to the intensity and duration of the labor; it is elastic, round, and about the size of the palm of the hand; it will have disappeared at the latest at the end of the first week and it requires no treatment.

The caput succedaneum must be differentiated from another form of swelling on the skull, the cephalhematoma, a hemorrhage between the periosteum and one of the bones of the skull, which we observe after prolonged and difficult labor, but also after easy labors. (Fig. 11.) As the periosteum is strongly adherent to the sutures, it is confined by these; it varies considerably in size and it enlarges during the first week from secondary hemorrhage; during the first two days it may be concealed under the caput succedaneum, but upon the disappearance of this latter it will be found as a doughy swelling which later becomes softer and fluctuating, its usual location being upon the parietal bone presenting at birth. It disappears in from three to twelve weeks, but it may persist even longer. This should also be let alone except that it should be covered by sterile absorbent cotton held in place by a cap. I can not warn the nurse too strongly against the use of massage or any kind of rubbing in this condition, for it may not only increase the hemorrhage, but it may also open the road to infection.

Of the greatest importance in the physiology of the newborn is the relation between the surface of its body to its weight. Compared with the surface of the body of the adult for each kilogram of weight, that of the mature newborn is almost three times as large, and that of the premature even larger.

In everyday life we keep the surface as small as possible when we wish to conserve heat, and we make it as large as possible when we intend to throw off heat. For instance in heating our dwellings we use plain round pipes to convey the steam or hot water to its destination, but we have irregular surfaces and ornaments on the radiators and also on stoves where we

want the heat to be given off. Did you ever consider why we have ornaments on kitchen ranges? They are not for esthetic reasons, but only to enlarge the surface and thus to heat the kitchen.

We can now understand that the larger surface of the body of the infant in comparison to its weight is a menace to the baby because it makes easier for it to radiate heat and this loss of heat has to be met by keeping the newborn warmer even than the older baby, and we have to provide it with a food containing more calories for each pound of weight than later on, because the newborn lacks a source of heat which is considerable in older children, namely in movements of its limbs and body, and it must therefore obtain all the energy to be used for the production of heat from the food. This explains why the mature newborn requires about 110 calories for each kg. of weight and the premature even more, up to 150 calories for each kg.

The newborn brings into the world all the ferments necessary for the splitting up of the food in the gastrointestinal tract. Sucking at its mother's nipples is an integral part of the digestive labor because it stimulates by reflex the flow of the digestive juices.

Still, though the newborn may possess the rough tools for digestion it differs from the older infant in the manner in which the food is split up and absorbed, and the intestinal wall, which is not simply a filter, does not in the first days of life form the firm protection against the alien substances inside the intestine which it will form later.

As all the ferments necessary for digestion are present at birth, it is unnecessary to predigest the proteins in artificial foods for young infants, as is still frequently done, and it is also superfluous to administer these fer-

ments to newborn or older infants, because the giving of food is a sufficient stimulus for the production of those fermentations which may have been insufficient in quantity at first.

The first stools of the newborn are the so-called meconium, a blackish-green, tough, homogenous, sticky, odorless mass. It consists of the fetal intestinal secretion, epidermal scales and amniotic fluid which has been swallowed after the fourth fetal month. It is voided during the first two to four days and is then supplanted by the characteristic infant stools, which in breast babies are of a yellow color, smooth, pasty, somewhat like scrambled eggs, with a not disagreeable acid odor.

Infection of the intestine with bacteria takes place about twelve hours after birth.

The change in the gas metabolism is a sudden one, as soon as the placental circulation is interrupted respiration should set in, otherwise the child will die. The first inspiration does not entirely unfold the collapsed lung, this takes place slowly and is favored by the crying of the newborn. In weak or premature babies parts of the lungs, especially in the lower regions in the back along the spine, will fail to expand, so-called atelectasis; or the part of a lung may become atelectatic from collapse due to occlusion of its bronchus from the aspiration of mucus or amniotic fluid.

If respiration fails to set in after birth or if it is only slight and superficial this is called asphyxia, which really means pulselessness.

An infant may be born asphyctic because placental circulation was interrupted prematurely from compression of the cord during birth, when it is twisted around the neck or body, or when it is prolapsed and thus compressed between the head and the maternal passages, or

the placenta may have separated before the child was born, or the child may have made premature respirations and have aspirated amniotic fluid which obstructs the respiratory passages.

Asphyxia may also be acquired, due to malformations of the heart and lungs, or from compression of the brain in difficult or instrumental labor, or from injury to the skull or brain.

We recognize two degrees of asphyxia, the blue and the white; the former is the lighter and respiration may set in spontaneously or after simple efforts at resuscitation; the latter, a more severe form, gives a serious prognosis and if the child should not respond to our efforts of resuscitation inside of one-half or at most one hour then the case will in all probability end fatally, even if the heart should still continue to beat. But we should never give up until the heart also has stopped beating.

Our efforts at resuscitation should consist first in assuring the ingress of pure air or oxygen, by freeing the air passages of all obstructing matter such as aspirated mucus and amniotic fluid. This we do by wiping the mouth and pharynx carefully and tenderly with a cloth wound around the finger; then by holding the infant by the feet with the head down; and if this should not succeed by aspirating the fluid through a soft catheter introduced into the trachea.

Second by stimulation of the respiration through the skin by slapping, sprinkling with cold water, rubbing off the child's body with a hot cloth or the hand, or by alternate immersion in hot and cold water.

Third by artificial respiration which frequently will prove successful after the other measures just advised have been applied. The best method of artificial res-

piration for nurses is the one of Marshall-Hall: the infant is laid on a table face downward, slight pressure is exerted upon its chest and then it is turned over on its side and quickly back again, this is done at the rate of fifteen times a minute; to prevent chilling, the child should be returned to the warm bath every few minutes.

The normal rate of respiration of the newborn is 40 to 44 a minute. The depth of the respirations increases from the first to the tenth day.

The respiratory type of the newborn and infant is diaphragmatic. Expiration is slower than inspiration. During crying there are pauses between respirations, and in the deeper inspirations after crying, the lower part of the thorax is drawn in owing to the softness of the chest walls.

The change from the fetal circulation (Fig. 12) to that which persists later in life is a gradual one and parts of the fetal circulation remain for a few days.

In the fetus the blood is arterialized, that is, it is charged with oxygen in the placenta, and then flows back into the child's body through the umbilical vein; through the venous duct of Arantius it reaches then the lower vena cava, and here is mixed with the venous blood returning from the lower part of the child's body. This mixed blood which is relatively rich in oxygen reaches the right auricle and is carried through the foramen ovale into the left auricle. From here it flows through the left ventricle and through the aorta into the arteries for the head and upper extremities. Through the veins and the upper vena cava it reaches again the right auricle and runs past the other stream without much admixture of the oxygenized blood into the right ventricle. From here it runs into the pulmonary artery and through the arterious duct of Bo-

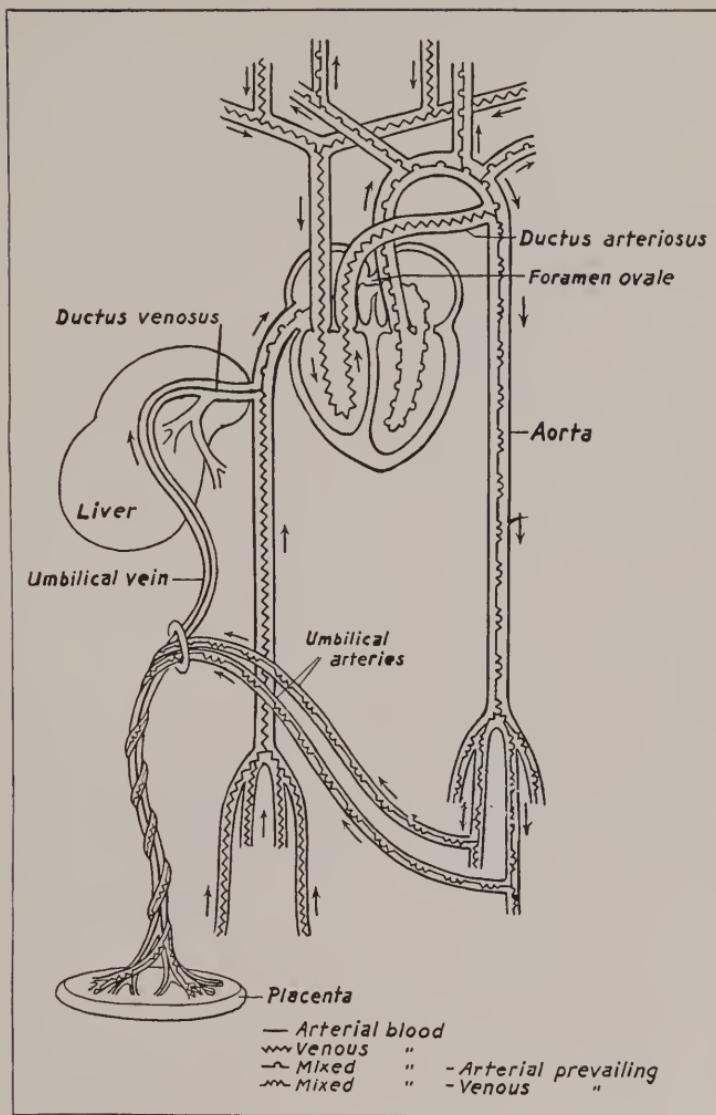


Fig. 12.—Fetal circulation.

tallus into the arch of the aorta. Here it is mixed with the oxygenized blood, part of which has gone to the upper part of the body, and flows into the descending aorta. There part of this blood is returned into the placenta through the umbilical arteries, while the rest runs into the lower part of the body and returns as venous blood through the lower vena cava.

With the first respiration the venous blood in the right ventricle flows through the pulmonary artery into the lungs to be oxidized. There the arterious duct of Botallus is no longer needed and it closes more or less rapidly forming the arterial ligament.

On cessation of the placental circulation through the tying and cutting of the umbilical cord the supply of blood to the venous duct of Arantius is shut off, this is eliminated from the circulation, it is occluded and forms one of the suspensory ligaments of the liver.

The foramen ovale is closed by the overpressure of the arterial blood now returning from the lungs and the two sides of the heart are now entirely separated, and thus the arterial and the venous blood can no longer be mixed.

The pulse rate of the newborn varies between 90 and 200. During sleep it averages 120. The ratio between pulse and respiration is therefore 3:1.

The temperature of the baby at birth is higher by one-half to one degree centigrade than that of its mother. The first bath will cause a drop in temperature of about one-half degree centigrade. The temperature falls during the first two to six hours after birth reaching a minimum which may be two degrees centigrade lower than at birth. The temperature rises much slower than it dropped and it reaches normal only on the second day. Bathing, crying, outside temperatures and

artificial heat will readily change the temperatures of the newborn during the first ten days, and the daily variations even of healthy babies, may then reach one degree centigrade.

Cooling of the newborn should be prevented by all means and it should be wrapped in a blanket as soon as it is born, even before the cord is tied and cut. In the uterus the fetus was surrounded by the even temperature of the amniotic fluid which begins to evaporate immediately after birth thus forming a source of cooling the body at a time when the apparatus for the regulation of the heat is still entirely insufficient.

After the cord is cut the baby should be surrounded by hot water bottles; the bath should be given rapidly with water at 100 degrees F.; towels, clothing and diapers should be well warmed beforehand, and in its crib it should again be surrounded with hot water bottles. This is especially important in weakly and premature newborn.

On birth the child is found to be covered by the ver-nix caseosa, a sticky, whitish mass, consisting of epidermal cells and the secretion of the sebaceous glands. The removal of this with oil is not always easy nor accomplished at the first attempt.

After the first bath the skin is red. At the time of the lowest temperature of the body the feet and hands will be blue and cold. This redness of the skin, the so-called erythema, and the desquamation of the skin which will set in after a few days are both physiological.

The scalp is covered with comparatively long hair, which, however, will come out again to make room for the permanent hair. The eyebrows and lashes are few and short. In premature and immature babies, espe-

cially on the back and shoulders we find short curly hair, the so-called lanugo.

A majority, about 80 per cent, of the newborn get jaundiced, icterus. It appears usually on the second or third day, very rarely later, it increases in intensity during the next day or two and it disappears by the end of the first or the beginning of the second week of life. Icterus appearing later or if it should not wane in time may mean serious trouble and should be called to the attention of the physician.

This physiological icterus of the newborn does not alter the normal color of the stools, nor do we find bile pigments in the urine. It seems to be more frequent in premature and weakly infants, but very big and strong babies will show it. The cause of it has not yet been determined.

The breast glands of the baby at birth are about the size of a hempseed. In boys as well as in girls their size increases; about the fourth day of life they will be as large as a pea and if pressed at this time a droplet of thin milky liquid will come from the nipple, which has the same chemical composition as colostrum, the first milk of the mother. The swelling will still further increase up to about the tenth day and the secretion will become more profuse. From the third week on, the size of the glands decreases, the secretion diminishes, and by the second month, sometimes a little later, the secretion will have ceased and the glands will be back to their former size. It may be absent in weakly and very small premature.

Treatment of this physiological condition is absolutely unnecessary and even dangerous. The glands should be left strictly alone, and they should not be irritated by massage which will only expose the glands

to infection. If there should be much swelling it will be best to apply a light aseptic protective dressing.

I have seen one case in which the meddlesome interference of a nurse caused the entire loss of one breast gland and nipple by infection in a healthy baby girl.

The newborn does not see, but, it has a sensation of light and can differentiate light from dark a few hours after birth. The eyes do not move together but are frequently turned, especially during the first two weeks, and even as late as the second month; this does not indicate a permanent squint.

Strong light causes shutting of the lids but no winking, neither does touching affect them.

At first there is some fear of strong light, so-called photophobia, but after a few days the infant will turn its head towards the light.

The newborn should not be exposed to strong light, but its eyes and face must not be covered either; placing its crib in a dark corner of the room or protecting it by a screen is sufficient.

The eyes of the newborn are blue owing to the lack of pigment in the iris.

Because the middle ear does not contain air before respiration has set in, and also because the walls of the outer auditory canal are close together, the newborn is deaf to sounds and noises; after a few days the infant will react to loud noises by making faces. Reaction to sounds sets in during the second half of the first month. We should, therefore not entertain any suspicion of the baby being deaf until the second month of life; if even then the baby does not react to a loud noise coming from behind then the physician should be consulted.

The newborn can taste. Sweet produces an expression of pleasure and starts a sucking motion. If a baby

should have been given sweetened water on its first day of life it may refuse plain water thereafter. Bitter, sour and salty things will cause it to make faces, to choke and to cry.

The infant can smell from the first day and it will refuse the breast when ill-smelling substances have been applied to the nipple.

The tactile sense of the newborn is quite well developed. It will suck upon the finger put in its mouth and it will grasp the finger with the hand against which it is placed. Irritation of the mucous membrane of its nose will make it frown and also sneeze.

It has a sense of pain and cries when slapped or when it has colic.

It is also sensitive to changes in temperature and it will show its pleasure at the first warm bath and still more so after a few days. It will also know if the food is too hot or too cold.

From the behavior of the newborn we can frequently judge of the disposition it may show later; some babies appear contented from their very first day and seem to like this new experience of extrauterine life, others resent strongly being disturbed in their contemplative existence in the warm amniotic fluid and are never satisfied.

The Infant

We call the baby a newborn until the navel is healed and also until it has regained its loss in weight which shows that the effect of birth has been definitely overcome; thus the stage of the newborn ends with the second week.

Infancy extends from the beginning of the third week of life to the end of the second year when the first set

of teeth, the milk teeth or deciduous teeth, are all in evidence.

Infancy is most conveniently again subdivided into the stage of the nursling, which extends to the time of weaning at the end of the ninth month, and the older infant.

The most important functions of the nursling are to sleep, to eat and to grow; everything else is of minor importance, and largely depends upon the proper performance of these physiologic funtions.

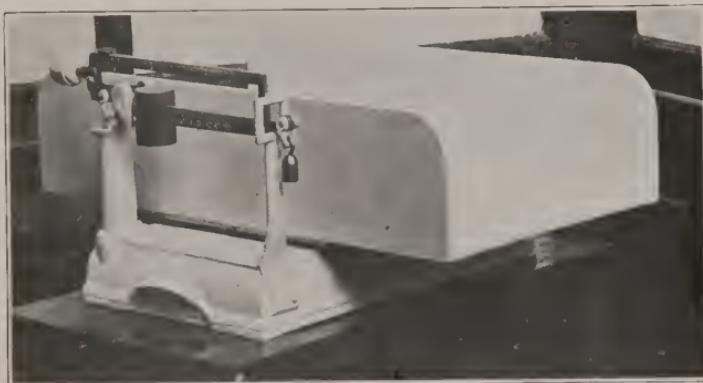


Fig. 13.—Buffalo scale.

Gain in weight is an important indicator of the way in which the child thrives and, therefore, a permanent record of this should be kept in the shape of a weight chart. The baby should be weighed at least once a week, on the same day of the week and under identical conditions as to the filling of the bladder and the rectum. It is still better to weigh the baby twice weekly. In cases of illness or digestive disturbances the physician may require a daily weight chart so as to keep himself fully informed of even the slightest variations; but in these cases it is advisable for the nurse to keep a

weekly chart as well because this will give a better general survey of the case and it can be continued after the daily weighing has been discontinued.

In weighing babies correctly a great deal depends upon the scales used. The spring scales generally found in hospitals, institutions and private homes, no matter how pretty they may be to look at, are useless. They are incorrect and register every motion of the child.

The best scale is one I have used extensively in my infant welfare stations; it weighs one-half ounces and



Fig. 14.—Scoop scale.

is very easy to read. It is the No. 800 Special of the Buffalo Scale Co. Its only drawback is its price, which was \$16.50 when last quoted to me. (Fig. 13).

Any good scoop scale, or scoop and platform scale can be used to advantage, provided it shows differences of one-half ounces. They are considerably cheaper and may be used in the household as well. Good scales of this type are those made by the Fairbanks Co., especially their Nos. 554 and 500. (Figs. 14 and 15.)

A healthy baby should gain during the first six months about six ounces a week, after that less, only about four ounces a week. Some weeks it may be gaining a little more, others a little less, but any considerable variations should be called to the attention of the physician at once. The weight should have doubled at the end of the fifth month and trebled at the end of the first year.



Fig. 15.—Scoop and platform scale.

The importance of the weight of the baby should, however, not be overestimated and it should not be considered by itself or alone. A low weight at birth, or a peculiarity from inheritance, overcareful feeding, or a disease overcome during infancy, all these may be shown on the weight curve without their indicating at the same time that the child is below par. Nor is a normal and, still less an excessive weight a sign of per-

feet health and development; on the contrary it may be due to a pathologic fat deposit.

I have refused for some years to officiate at any of the numerous baby shows where babies are judged somewhat like cattle and where they receive prizes according to their so-called perfect physical development and weight. I have always felt that the prize should really go to the baby who has done best under the most trying circumstances and against the greatest handicap. I have given such prizes on my own account in Infant Welfare work and the mothers, mostly uneducated foreign women, saw the point.

Of importance is a regular steady gain in weight and this alone will give us a guaranty of the undisturbed development of the infant. The final decision, if the development of the child is normal, depends just as much upon its general condition and the functions of all its organs. When we lift up a fold of its skin this must feel smooth, turgid and well moistened; dryness, flabbiness of the skin or abnormal perspiration are a sign of some disturbance in its health. The skin should also have a rosy pink color; many infants are naturally pale without being ill, but their ears should always be pink. Sore buttocks, skin eruptions and thrush are sure signs of a general disturbance of the baby's health. The abdomen should be round and when the baby is on its back it should be protruding over the sides, its walls should be tight but not tense; softness of the abdomen, a change in its shape, and tenseness are signs of illness. The firmness of the muscles is a very important criterion of the baby's condition; when they feel soft and flabby this is frequently the first sign of an acute illness and in fat babies especially it is an indication of a chronic disturbance of its health. Of great importance is also an

examination of the bones of the infant, especially of its skull; here the bones should be hard, the sutures close together; the anterior fontanel should be tight and neither sunken nor protruding; the size of the diameters of the large fontanel should not exceed 4 cm. in either direction, its size should be diminished considerably in the second half of the first year and it should be closed entirely not later than the fifteenth to eighteenth month.

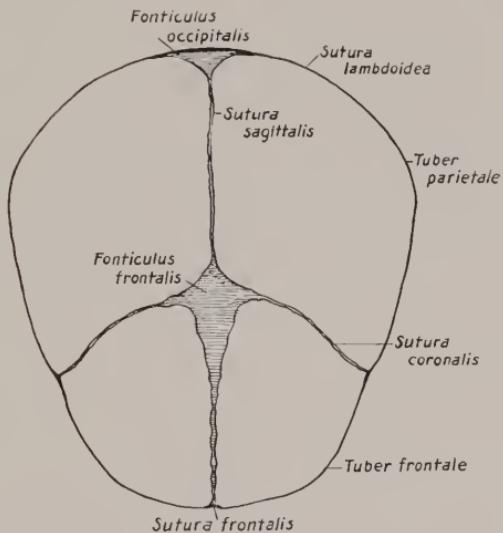


Fig. 16.—Fontanelles.

(Fig. 16). The regular and uninterrupted eruption of the first, deciduous or milk teeth is another good indicator of the baby's health and development; though slight changes in the order of eruption of the teeth may be observed quite frequently even in perfectly healthy babies. (Fig. 17).

The first tooth should appear towards the end of the sixth month and is usually one of the lower middle

incisors (1), next comes its mate (2), then the upper middle incisors (3 and 4) and toward the end of the first year of life the outer incisors (5, 6, 7, and 8), so that the child should have eight teeth on its first birthday. Between the thirteenth to sixteenth months should come the first premolars (9, 10, 11, 12), from the seventeenth to twentieth month the canines (13, 14, 15, 16) and

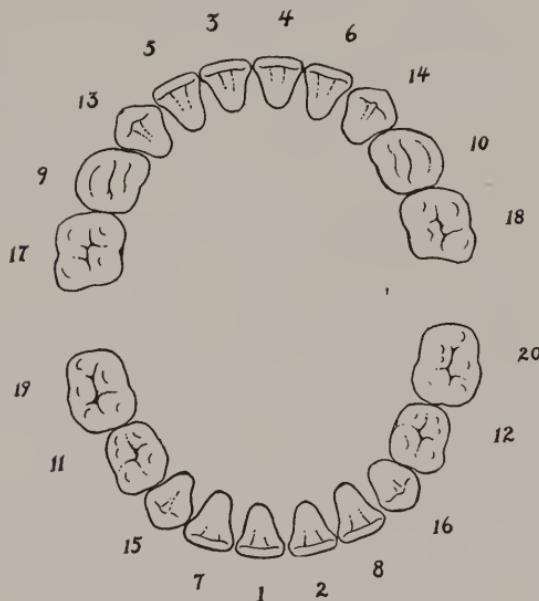


Fig. 17.—First dentition.

lastly between the twenty-first and twenty-fourth month the second premolars (17, 18, 19, 20). At the completion of its second year of life the child should possess its full complement of milk teeth.

The eruption of the teeth is a physiologic process. The formation of the milk teeth begins at the end of the second month of embryonal life. At birth the crown

of all the twenty deciduous teeth are ready underneath the gums and the formation of the permanent teeth has already begun. During the first months of infancy the jaws grow as do the roots of the milk teeth, these protrude more and more from the bones of the jaws, the gums are thinned correspondingly by absorption and finally, at the end of the sixth month one of the lower middle incisors will show through the gum, which by now has thinned down to the thickness of tissue paper. Provided the child's mouth has been left alone this process takes place without any swelling of the gums or the mucous membrane covering them, there is no bleeding, simply a retraction of the gum once it has become thin enough. The same happens at the eruption of every one of the other teeth, provided, however, that Nature is allowed to take her course to complete an entirely physiologic process in an unhampered and physiologic manner.

It is one of the weaknesses and conceits of human nature that men think they can improve upon Nature's truly wonderful works. Among the savage tribes and among some of the so-called civilized races we find the babies subjected to all kinds of unnecessary tortures to improve their looks according to peculiar ideas of beauty or otherwise to mutilate them according to some religious tenets or moral customs; if the newborn did not come into the world almost completely formed it would surely be quite easy to find somebody who thinks that he could improve and make more fit for the battle of life this the noblest work of the Creator.

But, lo and behold, the teeth appear after the child is born, and here at last is something on which the wise-aeres can vent their spleen, here at last are they given the long looked-for chance to improve upon nature, and

as a result they transform the physiologic process of teething into a pathologic one.

That they really have done so for centuries and ages is proved by the literature that has accumulated upon this subject, and by the superstitions and fanciful, as well as foolish, advice administered gratuitously by old women, those wearing skirts as well as others.

Worst of all, physicians have still further surrounded this perfectly natural part of human growth with mystery and dread, because they are apt to attribute any disturbance in the child's health about the sixth month of life to teething, whatever that may mean. Why the coming through and growth of the permanent hair is not in the same evil repute is beyond my understanding, somebody surely missed a chance for improving upon nature.

I know that nurses are only human, they may have been taught in training school that teething is dangerous and what more natural than that they should attribute any disturbance in the child's health to this and fail to call in the physician so that he may find out what is really the matter with their little charge, until it may be too late.

How many times have I not found these "teething" babies suffering from middle-ear disease, or from pneumonia, or from a digestive disturbance or some other easily diagnosed ailment?

I have long taught that any trained nurse who will still waste valuable time with home remedies and other things when a baby between the ages of six and twelve months is not acting quite right, and who fails to insist upon having the physician called, is neglectful of her duty and is not a safe person to be left in charge of a baby.

Babies begin to drool frequently after they are three months old, long before the teeth appear, and this increase in the salivary production has nothing to do with the teeth. They will also put things into their mouths as soon as they can make voluntary motions and long before they have any teeth, just as a young animal will try everything with its teeth to see if it can serve as food.

I do not see any reason why even a young baby may not have some pleasure and be allowed to put things into its mouth, but we should see to it that whatever we give to the baby for this purpose is scrupulously clean and that it has no sharp edges with which it can injure itself or infect its mouth.

Do not rub the baby's gums with your fingers or anything else, remember the process of absorption takes time; irritation causes infiltration, this means swelling and instead of hastening dentition you will only hinder it. If the baby should himself have irritated its mouth or have a slight infection of it then apply some mild antiseptic and cooling lotion. I have found tincture of myrrh, enough to make the water milky, very effective.

Neither should you wipe out a baby's mouth. This result of an exaggerated and misguided faith in antisepsis is responsible for a great deal of trouble. Very little, if any of the baby's food will remain in its mouth after feeding and this will not do any harm. The mouth is full of germs a few hours after birth, they are harmless and could not be removed with all our antiseptic measures. If you want to clean the infant's mouth after a feeding give it a little water to drink. There is some sense in this at least. But to scrub around a baby's tender mouth with your big finger armed by a piece of gauze instead of a scrubbing brush will injure

the tender mucous membrane, and thus open the road to infection, exactly the opposite of what you intended to do, and no amount of boric acid or other disinfectant will stop this infection. We learn a great deal from our mistakes, that is when we keep an open mind; I too used to have babies' mouths wiped out and I saw a great many cases of stomatitis and swollen glands under the jaws, but of late years, since I have given this up



Fig. 18.—Eczema cuffs.

as an unnecessary torture of infants, I have seen very few of these cases.

Should a baby be allowed to suck its thumb or fingers? A great many babies do this and they seem to get considerable comfort from it and I do not know that it does any harm, as long as the thumb is clean; it

seems unnecessary and it is quite easy to break the baby of this habit if we go about it in the right way and early enough before the habit has become inveterate by putting cuffs on the baby's arms so that it can not bring its hands to its mouth (Fig. 18). It may sound like heresy, but I personally do not believe that this habit will cause adenoids or deformities of the upper jaw; this is due to other causes, as we will see later.

The worst thing we meet with in the bringing up of babies is the pacifier. This is invariably a sign of poor care and poor nursing. If a baby should cry a great deal it must have a reason for it, and usually we can ascertain that it is overfed or otherwise uncomfortable and that it wants to tell us about it. What would you think of anyone to whom you want to complain about some ailment and who stuffed something into your mouth to keep you quiet? Put yourself into baby's place once in a while and look at these things objectively. Would it not be much better for you to investigate why the baby is crying and if you came to the conclusion that it was the food which is to blame, ask the physician to change it? Needless to say that the pacifier also teems with germs. It can not be kept clean, it drops on the floor, is given a cursory wiping off, and back it goes into the infant's mouth, here to cause infection. You may tell me that a nurse would not do this, but I shall not believe it, I have seen it done too often.

The so-called "Educator" crackers belong in the same class with the pacifier, only they may be a little worse, if possible, because they can collect more dirt.

The general behavior of the baby will give us the best indication of its well-being. We have to watch its disposition; whether it takes any interest in its surround-

ings, its motions, and its sleep. The slightest changes in these things should make us suspicious of an illness, the more so as they will appear long before other and more obvious signs of sickness will have put in evidence.

A healthy baby is never cross. It may cry when it is hungry, or wet, or too warm, but when this has been changed it will laugh again; unfortunately, still far too few babies are so well taken care of that they have no reason to be cross. Other babies again are spoiled very early in life, they are accustomed to get what they want if they only cry long enough, and when they have succeeded they can be quite pleasant again; I have seen infants a few weeks old who were thoroughly spoiled. But aside from these comparatively few let us remember that the healthy baby and the average baby in health is of a sunny disposition and in times of illness the first smile will frequently be a sign of improvement and will reward us for our efforts.

A further sign of well-being is expressed in the interest a baby takes in its surroundings, as a waning of this interest may be one of the earliest symptoms of impending illness. If a baby should be easily frightened this is also pathologic.

Babies love to move their limbs, purposeless and awkwardly at first, later more with coordination. In health these motions are quick and agile, in impending illness they lessen, become slower and more automatic.

The sleep of the healthy baby should be deep and quiet, it should not be disturbed by the ordinary sounds of the activities of the household, nor by talking or music in an adjoining room, nor by light. The first few weeks after birth the baby should sleep almost all the time waking up only for its feeding. As the infant grows older it will want to stay awake longer at a time

and in health it will soon coo to itself and be perfectly happy. During sleep it will assume a position similar to the one it occupied in the uterus with the knees drawn slightly up and the hands near the head. Any disturbance in the quality and quantity of the sleep, if it should get restless, light, easily interrupted, in a changed position will tell the experienced nurse that the baby is not well. Up to the end of the first year of life the infant should not sleep less than fourteen hours daily.

The first activities of the infant will tell us not only if it is well, but will also help us in forming an opinion about its intelligence and its stage of development.

The normal child will be able to lift up its head from the second half of the second month especially when it is placed upon its abdomen; it will be able to hold up its head when carried at about four months; at six months it should be able to sit up; at five months it will brace its legs when held, but it will be able to stand only at nine months when it can hold on to something; about eight months it will change its position and it will frequently begin to crawl, though some babies never crawl; at the end of the first year the infant will be able to stand up alone and will make its first attempts at walking.

Fixation and coordinated motions of the eyes will be observed at the end of the second month, at which time it will also smile first; at three months it will show more interest in its surroundings; at five months it will grasp things with the intention of holding on to them.

When a baby begins to crawl and makes its first efforts at standing up it is best placed into a so-called walking pen or baby yard, the bottom of which is covered with a clean blanket. In this it can be left alone for

an hour at a time, with some simple toy, and if it should get tired it will frequently go to sleep in it.

In summer a baby may be taken out for an airing when it is two weeks old. Naturally it must be wrapped sufficiently, and its head must be protected against the sun. At six weeks any baby, provided it is strong and healthy may be taken outdoors. It is also good practice to let a baby sleep outdoors as much as possible; many infants will sleep a great deal more outdoors. Should the weather be stormy or otherwise inclement, then the baby should be dressed in the same way as if it were to be taken out, and allowed to sleep in a room the window of which is open.

Any baby which is accustomed to regularity from the very first day of its life will be a good baby as long as it is well. The nurse should start the infant on a regular routine from the beginning, and all ministrations, and the feeding should be regulated by the watch. It is truly wonderful to observe how soon the little ones will know when the time for everything has arrived and how they will resent any, even the slightest variation from this regularity.

Many times I observed in private, as well as in institutional work, how a baby will be cross for a few days or will not take its food quite as well when a change in nurses has been necessary, and how it will settle down again after it has accustomed itself to the ways of the new nurse.

A nurse should naturally adhere strictly to the regulations of the physician in charge and she should follow these in every, even the most minute detail. But, whenever, as happens quite frequently, the healthy baby is left entirely in the charge of the nurse after the physician has ceased his attendance upon the young mother,

then I have found the following routine to work out best:

Babies usually wake up about six in the morning, especially when they have been trained right. They are then changed and put to the breast or given the bottle after which they should be put back to bed and sleep until nine. At nine they are taken up and given orange juice, if this should have been ordered, then they are undressed and placed on a hard mattress in a warm room and allowed to kick for about twenty minutes. Then they are bathed.

The water for the bath should have been boiled wherever the water supply is not above suspicion, so as to prevent infections of the skin. The temperature of the bath should be 95° F. for the first six months, measured with a bath thermometer, after that age it may be a little cooler, down to about 90° F.

The manner in which a baby is placed into its bath and held in it is of great importance; a baby which is placed into the bath slowly, and held in it securely, will show its pleasure at the procedure. On the other hand one which is frightened by being placed in the bath too suddenly, and which does not feel safe in the nurse's hands, will be afraid and cry at every bath.

The way in which I have been teaching to have the baby bathed is as follows:

The bathtub, either a small enamelled one, or one of the folding kind made of rubber cloth, should be high enough so that the nurse can do her work with comfort. Now the nurse standing or sitting at the right side of the tub grasps the baby with her left hand from underneath so that her fingers are in the child's left armpit, the thumb over the right shoulder, the infant's back resting comfortably upon the nurse's hand, its head on

her wrist, her right hand now grasps the baby's feet and she allows the baby to slide into the bath slowly, feet first until the whole body with the exception of the head is submerged in the water (Figs. 19 and 20). Now the nurse's right hand lets go of the baby's feet and is free to clean the child.

The best soap for the bath is a good quality of castile soap. All scented or antiseptic soaps may prove irritating to the tender skin and they are, furthermore, unnecessary; a clean baby will smell sweet without any obnoxious perfume.

Care should be taken that every fold of the skin is thoroughly cleaned in the bath with a sponge or clean piece of gauze, wash cloths are liable to get musty; then the baby is removed from the bath, which should not take longer than at most five minutes, and is wrapped into a warm soft Turkish towel on the nurse's lap, after removing it from the bathtub in the reversed order in which it was put in. Now the face and scalp are cleaned with fresh warm water and a separate sponge or piece of gauze; then the eyes, ears and nose are cleansed with gauze and absorbent cotton. The drying of the baby should not be done by rubbing it with the towel, as this may irritate the skin, but by gently patting the towel so that it will absorb the moisture.

After its bath the baby should be wrapped in a dry warm Turkish towel, and be put back into its bed covered warmly and allowed to remain there for about twenty minutes. The reason for this is, that babies perspire after the bath and this perspiration would soak into the clothes if it were dressed at once. At the end of the twenty minutes it is dressed for the day. At ten in the morning it is fed for the second time, and then it is put to sleep.



Fig. 19.—Placing baby into bath.



Fig. 20.—Holding baby in bath.

From eleven until one the baby should sleep outdoors, then it is taken in and may stay awake until the third feeding at two in the afternoon; during the afternoon it should be taken out for another airing, brought home at five, given its orange juice, then it may stay awake. At five-thirty it is undressed, allowed to kick again, given a sponge bath, and washed for the night, dressed in its night clothes, fed at six in the evening and put to bed. The last feeding should be given at ten in the evening but it may come any time between this and midnight if more convenient. The healthy baby should then sleep almost uninterruptedly from now until morning. If it should cry during the night all that is necessary is to make a change and it may even not wake up.

After feeding, the baby is best placed on its right side, so that the comparatively large liver does not press upon the stomach and force out some of the food. During sleep the baby's position should be changed about every one-half hour in day time. There should be two stools daily, one before the morning bath and one in the afternoon before it is washed. They can be trained very early to have their stools in the chamber. During or right after feeding the baby will usually urinate and once or twice in between, and it should then have a change at once to prevent irritation of the skin.

A baby which is well looked after, and especially one which is under the care of a competent nurse, does not have to be powdered; but if you should desire to follow this custom, which may be advantageous in very fat babies, then you should use either stearate of zinc or sculptor's clay, bolus alba, which latter has been sterilized by baking in the oven for one hour. Care should be taken that not too much powder is used and that this does not remain thickly in the folds of the skin, but

it should be wiped off again with absorbent cotton. If the powder is applied too thickly it will form a paste with the urine, and thus irritate the skin, the exact opposite from what you intended to do.

The older the baby gets the more it will naturally desire to stay awake, and, to some extent at least, it should be allowed to do so but by strategy we can make the baby sleep a good deal more than if we allowed it to determine this for itself.

On the whole, this routine will be beneficial, naturally with some modifications, until the baby is about a year old.

A word of warning seems to me to be necessary at this place. It makes a great difference if the nurse is in full charge of a healthy baby, or if she should be called in to take care of a sick baby. In the former condition she may train the baby according to the method which she has learned from her experience to be the most successful; in the latter she should let the baby continue as much as possible in its old routine, except when ordered otherwise by the physician. It is well-nigh impossible to train a sick baby, and even the well-trained baby will change the order of things during days of illness.

The Child

Comparatively little need be said at this place about should go on uninterruptedly in an even tenor, and its second year of life, and the child.

In the healthy child the growth and increase in weight should go on uninterruptedly in an even tenor, and its mental development should keep pace with its growth.

Acute disease will influence the weight of the child, causing a temporary loss, but this should be made up

during convalescence; the growth of a child frequently seems to be more rapid during an acute illness. Chronic illness will have a still more profound and far-reaching influence upon the development of the child.

The average weights and measures are given in the following table:

BOYS					GIRLS				
Weight pounds	Height inches	Chest inches	Head inches	Age	Weight pounds	Height inches	Chest inches	Head inches	
7.5	20.6	13.4	13.9	Birth	7.2	20.5	13.0	13.5	
16.0	25.4	16.5	17.0	6 mos.	15.5	25.0	16.1	16.6	
20.5	29.0	18.0	18.0	12 mos.	19.8	28.7	17.4	17.6	
22.8	30.0	18.5	18.5	18 mos.	22.0	29.7	18.0	18.0	
26.5	32.5	19.0	19.0	2 yrs.	25.5	32.5	18.5	18.6	
31.2	35.0	20.1	19.3	3 yrs.	30.0	35.0	19.8	19.0	
35.0	38.0	20.7	19.7	4 yrs.	34.0	38.0	20.5	19.5	
41.2	41.7	21.5	20.5	5 yrs.	39.8	41.4	21.0	20.2	
45.1	44.1	23.2		6 yrs.	43.8	43.6	22.8		
49.5	46.2	23.7		7 yrs.	48.0	45.9	23.3		
54.5	48.2	24.4		8 yrs.	52.9	48.0	23.8		
60.0	50.1	25.1		9 yrs.	57.5	49.6	24.5		
66.6	52.2	25.8	21.0	10 yrs.	64.1	51.8	24.7	20.7	
72.4	54.0	26.4		11 yrs.	70.3	53.8	25.8		
79.8	55.8	27.0		12 yrs.	81.4	57.1	26.8		
88.3	58.2	27.7		13 yrs.	91.2	58.7	28.0		
99.3	61.0	28.8		14 yrs.	100.3	60.3	29.2		
110.8	63.0	30.0	21.8	15 yrs.	108.4	61.4	30.3	21.5	
123.7	65.6	31.2		16 yrs.	113.0	61.7	30.8		

From this table we can learn several interesting facts. First that boys are heavier and larger than girls and that this persists from birth with the exception of the time between the twelfth and fourteenth year when the girls outstrip the boys. Second that the chest which is smaller in circumference than the skull at birth, measures the same as the head at one year of age and that

from about the fifth year it grows much more rapidly than the latter. In the newborn the chest is round, barrel-shaped, as the child gets older the chest is flattened and widened and this more so in boys than in girls.

Second dentition begins in the sixth year when the first permanent teeth, the first molars appear (1, 2, 3, 4); these are all through by the end of the seventh year. During the eighth year the middle incisors fall out, giving the children that funny appearance, and they are replaced by the permanent middle incisors (5, 6, 7, 8). In the ninth year the outer incisors are replaced by the permanent ones (9, 10, 11, 12); then the first premolars (13, 14, 15, 16) the tenth year; next the canines (17, 18, 19, 20) between the eleventh and thirteenth year. Between the twelfth and fifteenth year comes the change in the second premolars (21, 22, 23, 24); from the thirteenth to the sixteenth year appear the second molars (25, 26, 27, 28); the last molars, the so-called wisdom teeth (29, 30, 31, 32) may come out at any time between the sixteenth and twenty-fourth year, or even a little later, thus completing the full set of thirty-two permanent teeth. (Fig. 21).

I might add here that it is especially the canines which are surrounded by a great deal of superstition, this is shown by the appellation by which they are known among the laity, the upper ones being called "eyeteeth" and the lower ones "stomach-teeth," but, I want to assure you that in spite of these names they have nothing to do with any of the disorders of either the eyes or the stomach.

As soon as a child has any teeth we should begin with their care. First the nurse should clean them after getting up in the morning, after each meal and again at

bedtime, for this she should use a swab or a piece of gauze which I prefer to even the softest of toothbrushes. Nothing, however, is better for the teeth than their con-

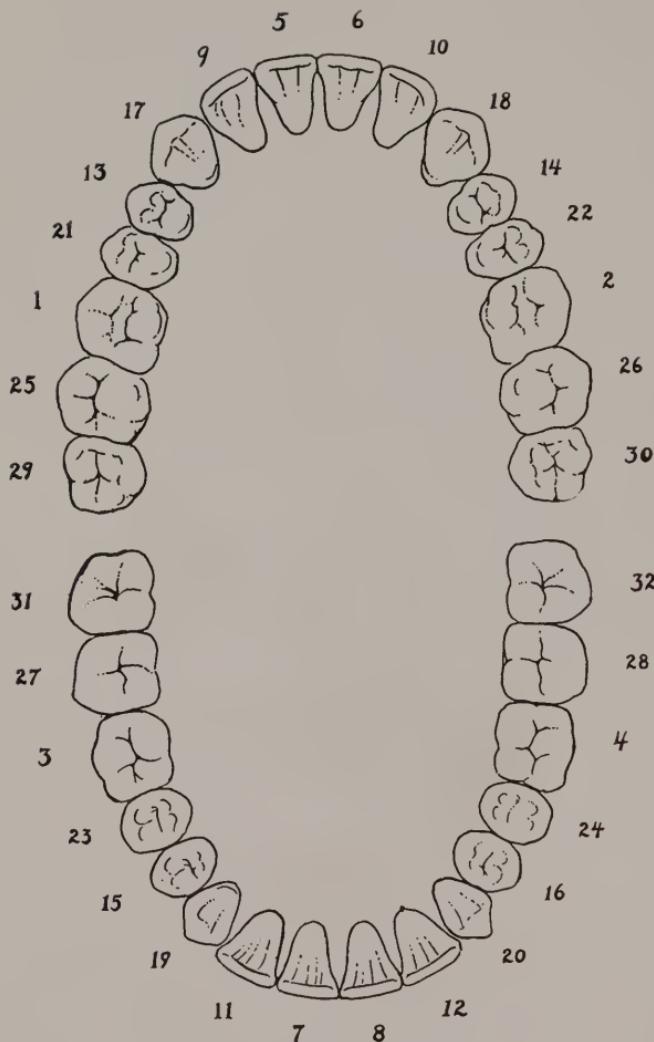


Fig. 21.—Second dentition.

stant use. If we give a young child nothing but mush and porridge, etc., the teeth, especially the incisors are not employed; but, give them a hard crust of bread or let them bite into an apple and this of itself will keep the teeth in good condition and clean as well.

I do not believe in tooth pastes and tooth powders, many of them contain chalk, or some other mineral matter, which in time will wear off the enamel.

As to mouth washes, the best of them is still the one most readily obtainable, fresh water. The proprietary mouth washes, with their high-sounding names, almost all contain different antiseptics, but not enough of any one of these to really do any good. If you should want to employ a mouth wash, this being indicated by the condition of the mouth especially during or after a severe illness, then you will find a few drops of tincture of myrrh or of an alcoholic solution of thymol crystals in a glass of water most serviceable.

A child should have its teeth inspected regularly every three months by a competent dentist and also after any severe illness. They should be kept free from any concretions of tartar and even the smallest defect in milk teeth should be attended to. If children are taken to the dentist regularly then they will not dread these visits but rather enjoy them because he will not have to hurt them. Unfortunately this is not done very often and this is the reason why a perfect set of teeth is so rare. We have learned, also, of late that many attacks of illness may be traced back to the germs collecting in and around defective teeth.

An organ which is frequently neglected in children is the nose. This serves not only for the sense of smell, but, perhaps more important, it is the filter for the air we breathe into our lungs. This air is warmed and

freed of dust in its passage through the nose which is for this purpose built like a set of radiators and filters over which the air has to go before it reaches the lower respiratory passages. The inside of the nose is also furnished with minute brushes, the cilia, which move toward the nostrils so as to remove the dirt collected. These may be injured in disease, or the dust from our streets and that raised from the carpets in our homes may be too much for them; I have, therefore, found it best to teach children as early as possible to let a warm physiologic salt solution or one of boric acid run through each of their nostrils on arising and before retiring; but, the solution must be allowed to run back and out through the mouth by its own gravity and it must not be forced through with a syringe, as this may throw some of the germ laden dust into the Eustachian tube and thence into the middle ear. Nor do I advise the use of peroxyde of hydrogen for this purpose because in foaming this will carry the dust before it and leave it in any recess, like water when sprinkled on a dusty floor or in mopping. Children can be taught to do this at a comparatively early age, and when the cleaning of the nose should be mandatory in case of illness the nurse will not have to fight a child thus accustomed to this necessary part of its toilet.

A child should also be taught as early as possible how to open his mouth and how to hold his tongue for the inspection of the mouth and pharynx, which is so frequently required in illness. This will save the nurse and the physician many an unnecessary fight, and it will also make the use of the tongue depressor, which children dread so much, superfluous.

The nails of the fingers especially, but also those of the toes should always be kept scrupulously clean and

neatly trimmed in health as well as in illness. In some of the diseases in which an eruption on the skin is one of the symptoms, or in others, in which itching is one of the most disturbing features, the child is sure to scratch itself in unguarded moments and it may thus infect itself.

The hair should be kept well brushed and combed, and the scalp be kept clean by frequent shampooing. In severe illness, which is combined with unconsciousness, it is better to get the consent of the parents to sacrifice even the most beautiful locks, rather than disturb the child in disentangling these snarls, or, what is still worse, letting the hair become matted together like a piece of felt. The hair should also be examined carefully for parasites and their nits, which are found not in the slums alone. I have often seen the children of the wealthy who had been carefully watched acquire lice from the servants or bring them back from school.

The care of the skin of the child also demands considerable attention, not only as to cleanliness which goes without saying, but it should be exercised. The skin and the subcutaneous fat serve not only as a protection for the body but it also serves as an organ of excretion and of the regulation of heat. In hot weather the sweat glands secrete more perspiration which is evaporated on the skin thus cooling this and thereby the rest of the body. This secretion of the sudoriferous glands is taken from the water in the blood; in order to have it produced, the blood vessels in the skin must dilate. When the body is in a cool surrounding the blood vessels in the skin contract to prevent the cooling of too much of the blood as this would lower the temperature of the body. These changes in the blood vessels of the skin are sometimes required to take place

very quickly and this is possible only when they are properly exercised and thus accustomed to these rapid changes, otherwise the body will be more liable to be invaded by germs. One way to exercise the skin is to keep it properly clothed, not too heavily so as to keep the child in a constant state of perspiration, and also keep the living rooms at a sufficiently low temperature, not higher than sixty-five degrees Fahrenheit; also to have the child sleep summer and winter in a well ventilated bed-room with the window open and not have the bedclothes too heavy. Further, by keeping the children outdoors as much as possible, either in play with other children or walking briskly, and finally by the application of cool water. Nothing is better nor more invigorating than a cool sponge bath in the morning on arising and a brisk rub afterwards, and many a child would not only feel but sleep better if it were given a cool shower after the cleansing bath before retiring.

Soap is used to remove the secretion of the sebaceous glands from the skin. This secretion, the sebum, is an oily substance which serves the purpose of keeping the skin elastic and also to keep it waterproof, to some extent. This sebum gets mixed with the dust and dirt in the air and must be removed in order to keep the skin clean. In illness the secretion of these glands is often insufficient and the skin becomes rough and feels dry.

In health the skin of the child frequently is producing an overabundance of this oil, especially on the scalp; in the face and on the shoulders, at the time of puberty, the glands are often filled with the stagnating secretion, the so-called comedones. Cleanliness of the skin is at this time even of greater importance.

I do not longer have any faith in the rubbing into

the skin of oils and greases for the purpose of nourishing the child; I have tried it and have never seen any good from this procedure, the more so as the skin will not only not absorb fat administered in this manner, but, it may clog the natural openings in the skin of the sudoriferous and sebaceous glands. In severe illness when the skin is very dry, and especially when sealing makes the child feel uncomfortable, the slight anointing with sweet almond oil will cause it to feel more comfortable.

In the convalescence after a severe illness massage should take the place of active motions at first, because this does not tire out the heart which is already weakened through its fight with the disease. It will strengthen the muscles and will thus prepare the child for the time when it can get up again. It should be done very lightly and gently and even then some children may object to it.

During days of illness especially when the child is unconscious the nurse should pay attention to the position of its feet and legs; the weight of the bedclothes will force the toes and feet down, which will cause the child some suffering later. The bedclothes should, therefore, be kept off the child's lower limbs by a cradle.

When the child is allowed to get up again after a prolonged illness the nurse must watch very carefully that it does not stand on its feet or walk too soon. The muscles of the legs are weakened and flabby and their injudicious use causes pain. Many convalescents complain of this; furthermore the weight of the body, no matter if emaciated or not, is too much for the muscles, they will stretch and the result will be broken arches or flat feet.

We frequently hear of the nervous child and it is

well, therefore, to consider here what is meant by this. Under this class come first the highly intelligent, wide-awake children, who are bubbling over with life and well-being, who can not keep still but are constantly active. They are full of animal spirits and asking questions of all kinds because they take so great an interest in their surroundings. These children must not be kept down too much nor must they, on the other hand, be allowed to be driven by overambitious parents or teachers. They need considerable sleep and plenty of outdoor romping around.

Next we find in this class the spoiled children who are accustomed to have their own will and who know that if they will only assert themselves sufficiently by crying or pouting they will finally succeed in getting what they want, no matter how unreasonable it may be. Among these we find a large number of the only child in a family who has been spoiled and pampered from its very first day. They show very strong likes and dislikes both as to things and persons, and are very trying to nurses as well as to physicians, who will frequently change places with someone else finding more favor in the eyes of these little tyrants. The nurse will also find herself in a very trying position with these children, when she attempts to carry out the necessary orders of the physician and meets with the strong opposition not only of the little patient, but also of his overindulgent parents. These children should not be classed as nervous children, but, more aptly, as naughty children. When they are ill they do much better in a hospital with its regularity and strict discipline than they do at home.

Then we find the truly nervous children, the offspring of one or both neurotic parents. I think that most of

them are not born neurotic, but rather that they become so by their constant association with their parents, by imitation; especially, as is so often the case, when they are allowed more freedom than is good for them one minute, and when they are denied the simplest and most reasonable of their wishes in the next. If they are not taken in hand and trained in time they will really become highly nervous.

I remember one very bright boy, an only child, who was what one might call a nervous child. His mother was neurotic and the poor rich little lad had to stand a great deal from her, though surrounded by the most costly toys. He had his first undisturbed night's rest at the age of fourteen when his mother was at the hospital for an operation. Up to this time she had come into his room at least three or four times a night to cover or uncover him, and many times she awakened him from a sound, healthy sleep in her efforts to ascertain if he were really sleeping; and this went on during his well and sick days, when he was alone or under the care of a competent trained nurse. Do you wonder that he became nervous?

Lastly we have the children with functional or organic diseases of the nervous system, with deficient intelligence and with nervous disorders due to a deficiency in the products of some of the glands with internal secretions. These cases require frequently the services of a specially trained nurse, one who understands these conditions thoroughly and is, therefore, better able to assist the physician. The study of these cases is often exceedingly interesting and very promising, but I find that only few nurses possess the special qualifications required in the care of these patients.

The special training may be acquired by service in one of the institutions for the feeble-minded.

Quiz

What is the average weight of the normal newborn?

What is the difference between born at term, mature, immature and premature?

How much does the newborn lose?

What causes the loss of the newborn?

When is the loss of the newborn made up?

What is the average length of the newborn?

What is meant by configuration of the head and how is it caused?

What is caput succedaneum and what causes it?

What is cephalhematoma?

What is the duration of caput succedaneum, of cephalhematoma?

What should you avoid in cephalhematoma?

What is the surface of the newborn compared to that of the adult?

What is the result of the larger surface of the newborn and how do you meet this?

Why are predigested foods unnecessary for the baby?

How do we call the first stools of the newborn and how do they look?

How does the stool of a normal breast baby look?

What is the first change taking place in the newborn?

What is atelectasis?

What is asphyxia? How is it caused?

Which forms of asphyxia do we recognize?

What would you do in asphyxia?

What is the normal rate of respiration of the newborn?

What are the changes going on in circulation after birth?

What is the average pulse rate of the newborn?

Why should you wrap the baby right after birth?

What should be the temperature of the first bath?

What is vernix caseosa?

What is lanugo?

What is icterus of the newborn?

What should be done for the breasts of the newborn?

Does the newborn see?

Is a squint in the newborn serious?

- What is photophobia?
Should you cover a baby's head and face?
Does the newborn hear?
Can the newborn taste?
Can the newborn smell?
Does the newborn feel pain?
How long do we call a baby a newborn?
How long do we call the child an infant?
Which are the most important functions of the nursling?
How can you tell if a baby is gaining?
What kind of a scale should you use?
How much should a baby gain?
How can we tell if a baby is developing normally?
What is a fontanel?
What is the size of the large fontanel, and when should it close?
When should the first tooth appear and which one?
When do the different milk teeth appear?
How many milk teeth should a baby have?
Does teething cause illness?
Should you clean a baby's mouth?
Should you allow a baby to suck its thumb?
Should you allow a baby to have a pacifier?
Why are babies cross sometimes?
How should a baby sleep?
How much should a baby sleep?
What can we tell from a baby's sleep?
When can babies hold up their heads?
When should a baby sit up?
When should a baby stand?
When should a baby begin to walk?
When will a baby smile?
When should a baby be taken out?
Which is the best routine for a baby?
What should be the temperature of the baby's bath?
How should the baby be placed into bath and held there?
Which is the best soap for babies?
On which side should a baby be placed after nursing and why?
Should a baby be powdered?
When does the second dentition begin?
How should a child's teeth be cleaned?
Why and how should the nose be cleaned?

- What care does the hair demand?
- What care does the skin demand?
- What is the purpose of the sebaceous glands?
- When and why do you give massage?
- When should you use a cradle?
- What do we understand by the nervous child?

CHAPTER III

THE CLOTHING OF THE BABY

BY M. J. ROBERTSON, R.N.

The nurse is often consulted by an expectant mother as to the proper clothing for her baby. This chapter will guide her in deciding on the right kind and number of articles, as well as giving suggestions on other important details pertaining to the proper care of an infant.

Clothing

The clothing of a baby is of far more importance than is generally believed; an infant should be dressed in a sensible manner, in soft warm or cool clothing suitable for whatever the temperature of the weather may be. The baby and child should be clothed according to the thermometer and not according to the calendar.

A baby born in winter should be dressed in wool or silk and wool undergarments, this will tend to prevent sudden chilling if it becomes overheated by too careful covering with blankets and in self defence kicks the covers off.

If a child is to sleep out of doors a sleeping bag is a necessary article of the wardrobe, this may be made in many ways, of many materials, the most sensible one, as well as the cheapest one, is of eiderdown made to fasten in front and either button upon itself or tied at the bottom with a drawstring to keep the child from kicking out of it and taking cold.

The second size shirts and stockings should be purchased for the average sized infant; though a bit large at first, they shrink a trifle and baby soon grows to fit them.

An infant should never be tucked up so securely in its clothing that it can not kick at will; it must be protected from draft, but it is not necessary to cover its head every time it is taken from one room to another. In the summer a healthy child should be dressed as lightly as possible, just a knitted band, diaper and muslin slip is sufficient, adding more clothing as the weather changes.

Diapers should always be soft, well washed and dried out of doors before being used at all, and should always be washed with good soap, plenty of water, and be well rinsed. A cheap soap might be the cause of an irritated skin. It is well to use a small piece of old linen, gauze or cotton inside of the diaper for a few days as the first stool—meconium—will leave a stain which can not be removed from the cloth.

The baby should have fresh diapers each time they are wet, and if watched, this time can be regulated to after nursing and once between, if the nursing periods are arranged for every four hours, as seems advisable for a healthy infant.

If a baby's flannels are not soiled with stool, it is quite sufficient to take them off, put them to air, using a fresh set and using the first set on the third day, washing them but twice a week. Washing is what ruins flannels, and a careful nurse will see to it that she does this work herself or teaches someone else the proper way; i. e., to wash them in warm soapy water and rinse in several clear waters of the same temperature, then stretch over wooden forms. The tiny wooden forms

for drying flannels may be purchased very cheaply (Fig. 22), and if these are not to be had, smooth the articles into shape and dry slowly. If properly washed they should be as soft as new.

A careful nurse will try not to use all the pretty things prepared for the baby while she is on the case, but save a goodly number for the mother to use when she proudly assumes the care of her baby.

A newborn baby should be dressed in the follow-



Fig. 22.—Wooden forms for flannels.

ing manner: First, a band, made of an unhemmed strip of flannel six inches wide by twenty-seven inches long, is wrapped smoothly and evenly, but not tightly, around the baby's abdomen, to hold the cord dressing in place more than for any other reason; sew this on or tie with tapes to be sure it stays in place; next a wool and silk shirt is put on and adjusted without pins; next comes the diaper of soft birds-eye muslin, which is adjusted by folding as illustrated (Fig. 23), placing it as

smoothly as possible under the baby's shirt and pinning it securely, though not too tightly, to the shirt in front. Another way of adjusting the diaper is to fold it lengthwise into a strip six or eight inches wide



Fig. 23.—Triangular diaper.

and twenty-four inches long. Place the baby about in the middle of this strip, fold between the baby's legs, and pin up the sides and to the shirt as illustrated. (Fig. 24.)

Stockings of wool should be used in winter securely fastened to the diaper leaving no part of the sensitive skin exposed.

The next article of clothing is a pinning blanket, made of a strip of outing flannel twenty-seven inches long,



Fig. 24.—Rectangular diaper.

hemmed at one end and adjusted at the top by a big box pleat stitched flat in the back; this is placed well under the baby's arms, lapped well over in front and either sewed or fastened with tapes.

Over this is worn the first few days a soft, loose and warm flannelette night gown and a soft light kimono or knitted jacket may be used. (Fig. 25.)

If a child urinates a great deal, an extra folded diaper may be adjusted between the child and the pinning-blanket.



Fig. 25.—Kimono, knitted jacket and booties.

As the child grows older the pinning blanket might be used at night only, with the flannelette nightgown, this should be made with a drawstring in the bottom; pajamas or sleeping garments with feet are very sensible for an older child to wear. A Gertrude skirt or

princess slip of flannel and one of soft muslin may be worn in the daytime with a plain little dress of any soft material the mother may choose, as nainsook, dimity, muslin, or longcloth.

The knitted band may at this time be substituted for the one of flannel. A baby's dresses should always be made rather plain with handwork or a bit of dainty lace for trimming and should never be starched.

Knitted shawls are very warm and convenient to use either day or night.

If a baby's sleeves slip up the arms, the shirt sleeve may be pulled down and turned back on itself but over the dress sleeve; for an older child tiny, so-called beauty pins may be used, or narrow, shirred ribbon bands. Care should be taken that pins are always well protected and that bands are never tight.

Bed and Bedding

A large clothes basket makes a very simple bed (Fig. 26) and this may be made as attractive as desired by dotted mull valance and ribbon, or left clean and simple as it comes from the store. Of course there are any number of different kinds of beds and baskets for babies, but nothing is so easy to keep clean as a little brass or white enamel bed which may be used for some years. (Fig. 27.) The one thing that recommends the light basket is that it may be moved from place to place with ease and it is an excellent idea to have the basket on rollers.

The mattress should be of hair when possible, as this makes a firm, smooth surface for the baby to lie on. If this is not obtainable a folded blanket or mattress padding may be used and these can be frequently aired, and if covered with a thin rubber sheet can be

kept clean and free from stains. To prevent drafts curtains may be hung inside the iron bed.

A baby's bed should be made up in the same manner as a large bed; i. e., sheets, upper and lower, with a soft, warm, but light blanket, and this covered with



Fig. 26.—Clothes basket as bed.

any one of the dainty spreads so much in use. No pillow is necessary, nor should one be used.

If a baby is to sleep on the porch or by an open window it should be protected from flies by netting and from draft by screens; whenever sleeping, a baby should be turned often, and this as well as changing its diapers can be done without waking.

Exercise

An infant should be left to itself as much as possible and not amused, it will find endless amusements for



Fig. 27.—White enamel bed.

itself; but at some time during the day it should be undressed and placed upon a firm mattress, in a warm room, and allowed to kick to its heart's content for at least fifteen minutes; this might be done just before its bath or at bedtime.

LAYETTE

- 6 cotton slips, 27 inches long.
- 6 outing flannel nightgowns.
- 6 outing flannel pinning blankets.
- 4 flannel skirts, to fasten on the shoulder.
- 3 shirts, silk and wool, 2nd size.
- 3 flannel bands, 6x27 inches.
- 3 pair wool stockings, size 2.
- 3 pair booties.
- 3 knitted bands with shoulder straps.
- 6 dozen diapers 24x24 inches.
- 2 dozen diapers 20x20 inches.
- 2 soft blankets.
- 2 knitted jackets.
- 1 soft knitted shawl.
- 1 sleeping bag.
- 1 coat or cape.
- 1 cap or hood.
- 1 carriage robe.

TOILET BASKET

- 4 soft towels.
- 2 wash cloths.
- absorbent cotton.
- 1 soft hairbrush.
- 1 bath thermometer.
- 1 rectal thermometer.
- 24 safety pins assorted sizes.
- 12 paper bags for soiled dressings.
- 1 old soft blanket.
- 1 bottle olive oil.
- 1 jar or tube white vaseline.
- 1 bottle pure grain alcohol.
- 1 hot water bag and flannel cover.
- 1 box plain talcum powder.
- 1 cake castile soap.
- 1 box boric acid crystals.

Quiz

- What should determine the weight of a baby's clothing?
What should a baby wear in winter?
What is best for a baby outdoors?
What should be the size of the shirt for a healthy newborn?
Should a baby's head be covered?
What should be the clothing of a healthy baby in summer?
What is the care of the diapers?
How should flannels be washed?
How would you dress a newborn?
What is the purpose of the flannel band?
Which is the best and cheapest bed for babies?
Of what does the layette consist?
What should be found in the toilet basket?

CHAPTER IV

THE FEEDING OF CHILDREN

FEEDING OF INFANTS

Breast Feeding

Nature provides for the young infant a food which is furnished by the breast glands of its mother.

During pregnancy, especially during the latter months, the breasts grow in size from the physiological increase of glandular tissue which is stimulated by some hormone issuing from the placenta. Toward the end of pregnancy, and during the first days after the birth of the child, the breasts of the mother secrete a liquid, the so-called colostrum, which is yellowish and which contains leucocytes filled tightly with fat globules, the so-called colostrum bodies. The colostrum differs materially from the milk which will be secreted later, in that it contains considerably more albumin, as high as five to six times as much, and less sugar, about one-half to two-thirds.

About the third or fourth day after confinement the real milk begins to appear and by the end of the first week the colostrum bodies have disappeared and the milk now has the characteristic bluish white color. The regular nursing of a strong baby stimulates the secretion of this and it will increase in amount corresponding to the demands of the child.

The amount of milk secreted by a mother varies con-

siderably in different women, some secrete barely enough for their baby or even an insufficient amount, while others may produce so much that it will run out between nursings, and they have enough to feed several infants. I know of one woman in a large institution who was able to nurse as many as five children at once and to do this during several months.

The average composition of a mother's milk is as follows:

		<i>per liter</i>		<i>caloric values</i>	
Proteins	1.5%	Protein	15 grams	Protein	61.5
Sugar	7.0%	Sugar	70 grams	Sugar	287.0
Fat	4.0%	Fat	40 grams	Fat	372.0
Salt	0.2%	Salt	2 grams	Salt	0.0
Water	87.3%	Water	873 grams	Water	0.0
Total	100.0%	Total	1000 grams	Total	720.5 per liter

This will give us a caloric value of 21.6 calories per ounce and 691.2 calories per quart.

Mother's milk is, as may be seen from its chemical composition, the only perfect food for the baby, but, aside from this it has other perhaps greater advantages which are not so evident.

It is furnished at the right temperature.

It is practically germ-free, even if the mother should be suffering from an infectious disease at the time, provided, naturally that the breasts are not affected.

It is given to the child directly from the breast thus obviating any handling which is one of the greatest sources of contamination in animal milk.

It is always to be had at the right time.

Finally, being a transudate to a large extent from the mother's blood it will contain the protective bodies of some of the diseases which the mother has overcome

at some time or other, and it will thus confer a certain amount of immunity upon the baby; this no other milk can ever do because it can confer this immunity only upon the young of the same species.

In short, mother's milk is the only natural food for the baby and in order to emphasize this still further, we do not longer speak of artificial feeding when referring to the other modes of feeding, but we call it unnatural feeding to differentiate it from the only natural kind of feeding possible.

No other food can take the place of mother's milk. This we see in the mortality statistics which show that only one breast-fed baby dies during its first year of life to every ten babies who are not given this advantage.

In practice we meet with considerable objection to nursing on the part of young mothers and their relatives and friends. Some women do not want to nurse because they are afraid it might spoil their looks or their shape; these we can reassure; many a woman becomes only really beautiful after she has nursed a baby, and as to shape this is really of no consequence, as the shape of the modern woman is mostly a matter of artifice and then shapes change almost with the seasons.

Others again object because it would interfere with their pleasures or social duties; this we can put aside as unworthy of a true woman and mother. Or we hear it put forward that the mother is nervous and that the baby might get this nervousness through the milk. This is one of the most ridiculous arguments we can hear, and we hear it quite often.

Or it is claimed that the mother is weak or anemic. Any woman who is strong enough to carry a baby during nine months of pregnancy and to nourish it with

her own blood during all this time, will also, as a rule, be strong enough to nurse it for a few months at least.

In fact, most of the arguments we hear put forward by mothers or their friends why they can not nurse their baby are nothing but thinly veiled and invalid excuses.

One, and one only, reason do I recognize why a mother must not nurse her baby and that is when she is suffering from tuberculosis; this for the reason that babies are extremely susceptible to this infection and that hardly any of the babies so infected survive.

Other of the usual diseases on the part of the mother does not make nursing absolutely impossible, not even one of the infectious or contagious diseases, and it must be left entirely to the judgment of the physician, if he thinks it advisable on account of the mother to stop her nursing temporarily. I have seen mothers suffering from typhoid and pneumonia successfully nurse during their entire illness without any bad effect either upon the mother or child.

The nurse should never undertake the grave responsibility of deciding if a woman is able to nurse her child or not, on the contrary she should use her every effort towards the continuance of this one of the noblest duties of a true woman; being with the mother all the time she can do this much better and more successfully than the physician who of necessity can see his patients only comparatively rarely.

In order to be successful in this, however, the nurse must be acquainted with all the arguments which she may bring forward in its favor, and she must give them in a convincing manner, not half-heartedly as if she did not believe it herself but had only learned these things by heart like a parrot.

This is one of the many times when the nurse can prove her loyalty to her noble profession and to the physician under whom she is working at the time. The nurse is the physician's most valued and trusted assistant, he depends upon her and in return he will stand by her through everything. But, he knows that "loyalty" is the motto of her profession and he expects it in this as in everything else.

Now comes the important question: How often should the baby be nursed and at what intervals?

Naturally, whenever the attending physician has given orders in regard to this they should be carried out to the very last detail the same as any other directions without any questioning or hesitation on the part of the nurse.

But when, as is so often the case, this is left to the discretion of the nurse, then I would advise her to adopt the routine which I have tried in a very large number of cases in private practice, in institutional work, and in my extensive dispensary consultations in several infant welfare stations with which I had the pleasure of being connected.

I might say right here that I have tried all the different methods advised and that I have finally come to adopt this routine because I found it almost universally successful.

To begin with the newborn. After the active labors of the mother and the passive labors of the infant during childbirth both will be exhausted and they will require first and foremost of all a good long refreshing sleep. The baby is too busy getting accustomed to its new and strange duties of maintaining its own body heat, of providing itself with oxygen through respiration and to all the fundamental changes going on in its

organism to waste some of its limited energy upon the fruitless task of trying to obtain unnecessary nourishment which is present at this time in only very minute quantities. Imagine yourself after a very strenuous day of work feeling sore all over and too tired to eat, when all you desire and all you need is sleep and some more sleep. That is the case of the baby after birth. Again I say put yourself in the baby's place once in a while.

As to the mother she also is exhausted; she has most likely not had a good undisturbed night's rest for some time, she wants some food and then rest.

If you leave the baby to itself you will notice that it will satisfy its need for sleep to its heart's content and it will hardly wake up for twenty-four hours. Why should we disturb it then; why interfere with nature's wise provision?

If the baby should wake up give it a little warm water, but without sugar—sugar is food and might be harmful—and above all unless ordered do not give any of the old-fashioned teas or decoctions which have been handed down from the dark ages without having any apparent right of existence. Nor must you offer the baby any unnatural food in the bottle, it will do no good but it may do harm.

After the first twenty-four hours when both mother and baby have been refreshed by sleep and when some colostrum at least has collected in the breasts, then I allow the baby to nurse twice in the twenty-four hours; three times during the third day; four times during the fourth; and from the fifth day on I have the baby nursed regularly every four hours in daytime, that is, at six and ten in the morning, at two and six in the afternoon and for the last time at ten in the evening;

nothing is to be given to the baby during the night from ten in the evening until six the next morning.

Try it a few times when you have the chance and you will be quite as enthusiastic about it as I am myself. No longer will you see the babies which are turning night into day, who want to nurse all night because the warm milk soothes their aching little stomachs for a few minutes at least and who are too exhausted in daytime to take even one good nursing. No more will you have to hustle around to make some fennel, or catnip, or peppermint, or some other kind of tea for the colicky baby. No! the baby will learn in a very short time what is expected of it and it will soon know when it is time for nursing: and when it is put to the breast it will be hungry enough to really suck and it will not fall asleep and forget its duty.

Compare the baby on this schedule with one that is on the old-fashioned two hour feedings which I gave up years ago because it proved a failure. The four-hour baby is contented, it sleeps quietly and soundly, it has no colic, its stools are normal and passed easily; it does not wet itself every little while, and it does not spit up some of its food after nursing. And I must tell you that this last point is of great importance because a healthy, well-fed baby does not spit up any of its food, this is an economic waste which would not be tolerated by nature. Whenever a breast-fed baby spits up any of its food you can be sure that it is not fed right and that either it is overfed, which is most frequently the case, or, much more rarely, that it is not getting enough.

Quite different is the behavior of the two-hour baby. Provided it is not fed too much and too often at night, it is at its best early in the morning after its first nurs-

ing; after the second nursing it begins to get somewhat restless and this with every succeeding feeding until it is spitting up after each nursing and is crying shortly after it from pains in its overloaded stomach. It soon will not nurse right many times thus instinctively regulating things to some extent at least; it will either be constipated or have loose stools with particles of undigested cream; it will wet itself frequently and soon it may get sore buttocks from this; its sleep is light and easily disturbed; in short its behavior will not be that of a well baby.

What happens in the case of the two-hour baby? An infant's stomach has a limited capacity and it takes some time to digest a breast meal. I believe that it takes three and one-half hours for a baby's stomach to digest a good generous feeding. The baby's stomach needs some rest after each meal, the same as ours; it is not a *perpetuum mobile*. Now if you have a baby nurse, let us say at six in the morning; at eight o'clock when it is given its next meal there will still be some undigested milk in the stomach and the new milk which gets into this will at once coagulate into a hard lump. The same will happen at every successive feeding until finally there is no more room for new food and the baby must spit it up. Do you wonder now that the baby is uncomfortable and is cross? Would you care to try a similar experiment upon yourself? Again, put yourself sometimes in the baby's place.

Now I can hear quite a few of you ask me: How is it, that thousands, yea millions of babies have been brought up on two-hour feedings and have been well and thriving? I shall answer you, that this is quite true, but that we have done many things in the past differently from the way in which we do them now

and that we got away with it; considerable numbers of people lived to ripe old age before we knew that bacteria caused certain diseases. Is that any reason why we should not follow the mandates of modern hygiene? Many people reason that way, I know, but this is no reason why we who have been taught better and who can judge of these things should let up on our continuous watchfulness. Furthermore it is a well-known fact and one which is evident daily when we look at bottle babies, and that is, that some babies will thrive on any kind of feeding while others will not, and we can never tell when and where we shall meet the latter kind. That "prevention is better than a cure" is truer in infant feeding than most any other field of medicine, as the results of bad feeding may show through the rest of life and be a permanent handicap to a child.

In order to convince a young mother that it is best for her to nurse her baby the nurse must know how to make this as easy as possible, so as to be able to instruct her.

When the mother wants to nurse her baby while she is lying in bed, she turns over to the side corresponding to the breast she is to give and a pillow is placed against her back. Then the baby is placed upon the lower arm so that its face is opposite the breast; the upper, free hand now guides the nipple into the baby's mouth, taking care that not only the nipple but also part of the areola, the brown ring around it, gets into the baby's mouth; now the first and second fingers slip over the breast behind the areola from above, one on each side, and keep the breast away from the infant's nose. (Fig. 28.)

When the mother sits up to nurse, then she should

use a low chair, not a rocker, with a comfortable back; where this is possible a special chair should be found in the nursery for this purpose. She should put the foot corresponding to the breast she intends to give upon a footstool which is just high enough so that when she now places the baby across her lap its mouth will be



Fig. 28.—Nursing baby in bed.

within easy reach of the nipple. Then she guides the nipple into its mouth and holds the breast off its nose the same as before. (Fig. 29.)

The nurse must know exactly how to do this and she must be able to place both mother and child in the right position, then only will she be successful in this

and she will be able to save the mother from many a backache and from many anxious hours. Here, as is so often the case in nursing, there is only one way to do things and that is the right way.



Fig. 29.—Nursing baby sitting up.

If the mother and baby are taught rightly then we shall not have any difficulty in a good many cases, but still in a considerable number, obstacles offer themselves with which the nurse must be acquainted and which she must know how to meet.

First, she will meet with the weakly baby, often it

is one born prematurely, who still lacks the necessary reflex to suck; with this it will require time and regularly repeated efforts before we can teach it what to do. One expedient, which will work in a good many

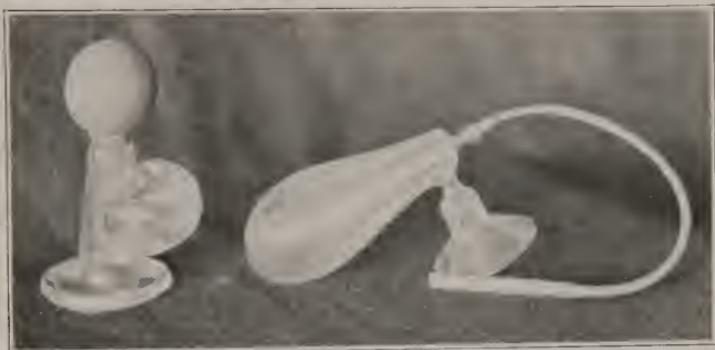


Fig. 30.—Breast pumps.

cases, is to express a little milk into the baby's mouth to teach it what is meant by the procedure.

If the baby should be too weak to draw any milk, then this may be drawn off with the breast pump (Fig.



Fig. 31.—Breck feeder.

30) from which the baby can then draw the milk itself or the milk may be given to it with a spoon or a Breck feeder (Fig. 31). In some very weak babies the physician may order the milk to be given by gavage through

a No. 7 soft rubber catheter and naturally the nurse must know how to do this. It is quite easy after you have tried it a few times.

Whenever the baby is too weak to empty the breast, or when we must resort to the breast pump, great care must be taken that the breast is emptied at each nursing, otherwise it will dry up very soon and this it will do most likely sooner or later anyhow. In these cases and when the family can afford it, it is a good plan to take a wet nurse with her own baby into the house, so that this healthy, strong baby can stimulate the young mother's breasts and keep them going until her baby is strong enough to do this for itself. Frequently we meet with considerable objection to this; it is distasteful to many a woman to have another baby at her breast, but the nurse can make this easy with the proper amount of tact and by explaining that this is only a temporary measure and one which is sure to work out for the best. Often it takes considerable persuasive power on the part of both physician and nurse.

Some breasts give up their milk quite readily, too readily in fact, while others demand a considerable amount of effort on the part of the baby, but, with patience and perseverance we will succeed.

The care of the breasts is also of the greatest importance. During the three or four months before confinement the mother should be instructed to draw out the nipples regularly every morning and evening and to wash them with cold water or to apply a mixture of equal parts of glycerin and sweet oil to harden them. If the nipples should be drawn in and can not be pulled out, then a nipple-shield (Figs 32 and 33) will often still make nursing possible.

Before each nursing the nipple should be sponged

with some boric acid solution and the same should be done right after, care being taken, however, that the nipple is then dried properly.

I know of no more painful condition of the nursing mother, nor one which more frequently interferes with this duty, than cracked nipples and these can be prevented in a large percentage of the cases by the proper care of the breasts. Once the cracks in the nipples have



Fig. 32.—Nipple shield.



Fig. 33.—Nipple shield.

developed only the most painstaking care will make nursing with a nipple shield possible; but even then the pain often interferes with the milk; in many cases I have seen nursing made impossible by this condition.

Lack of care and cleanliness of the breasts will often cause abscesses in one of these to form and then the nursing at this breast should be given up, temporarily at least, until it is healed.

Usually on the fourth day when the milk begins to shoot into the breasts they become heavy and tender

and the glands in the axillae become swollen. Great relief can be given by a properly applied breastbinder, but few nurses know how to do this properly.

The patient is told to lift her breasts upward and inward, then the nurse takes a strong piece of cotton or other cloth, for instance a roller towel, this should be eight inches wide, and it is laid from the woman's back and fastened in the middle over the breastbone

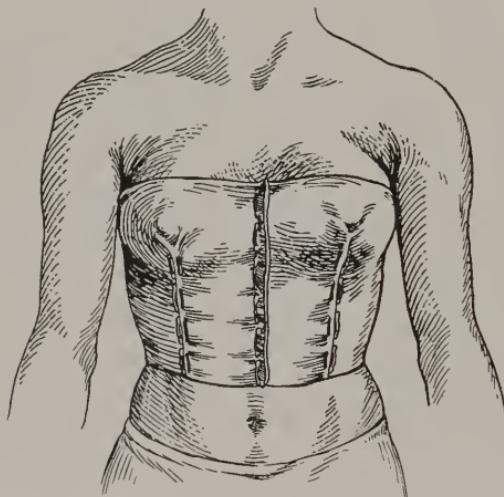


Fig. 34.—Breast binder.

quite snugly with safety pins from below upwards, so as to keep the breasts upward and inward. Then a tuck is made on each side under the breast and held with safety pins (Fig. 34).

At this time caking of the breasts may also occur, especially when the baby does not empty them thoroughly; the milk ducts and glands can then be felt as hard cords and lumps under the skin and this condition is frequently quite painful. Gentle massage of the affected breast from the outer border of the

areola to the outside of the breast will often bring great relief; but with this the breasts must be thoroughly emptied by means of the breast pump.

How long should a baby be allowed to nurse? This is one of the questions which is difficult to answer in a general way, because it depends upon the way in which the breasts give off the milk, and upon the strength with which the baby nurses. As a rule a nursing should not take longer than from fifteen to twenty minutes. Careful weighing during prolonged periods in a number of babies has shown that the infant takes three-quarters of its meal in the first ten minutes of each nursing.

Frequently we will find that if we let the baby nurse for fifteen minutes it may get too much milk and will spit up some of it. In these cases a reduction of the time allowed for the nursing will readily remedy this.

How much should a baby get at each meal? This we can figure out quite easily. We know from careful investigation that a strong, healthy baby, born at term, should daily receive at first fifty calories for each pound it weighs. Mother's milk represents at this time in round figures twenty calories in each ounce and we would, therefore, allow the baby two and one-half ounces to each pound daily. The baby is nursed five times in twenty-four hours and it should then get one-half ounce for each pound at each nursing. Experience tells us, however, that it is not wise to let a baby have more than seven or at most eight ounces at any nursing, no matter what its weight may be.

Careful weighing has also told us another interesting fact, namely, that babies do not get the same amounts at each of the five nursings; and, that the first meal in the morning is usually the one when they take the most.

which must naturally be taken into account in determining how much the baby may have.

A question which seems to be still in dispute, though I have settled it to my own satisfaction long ago, is: What shall we allow the nursing mother to eat and what shall we deny her?

Well do I remember the time when I was in college and we were taught that the nursing woman should not have any potatoes, that she should not have salads nor pickles; in short, her dietary was rather limited, although none of my teachers could give us any good reason for this, they simply repeated one from the other.

When I was still engaged in obstetrics I tried out all the different diets which I had been taught and of which I had read later; I have also been guilty of keeping the young mother during the first few days after confinement on gruels and large quantities of milk, and of foreing her later to take milk between meals and large amounts of liquid altogether; but, let me tell you, I have learned from my mistakes—no better school can be found—I have mended my ways much to the delight and benefit of my patients.

During the last years I have allowed the young mother anything she cared to have right from the time after her first refreshing sleep.

If the baby was born in the middle of the night I allowed the mother a full breakfast of fruit, cereals, meat and eggs and coffee; if it was born during the forenoon I allowed the regular dinner; if in the afternoon a full supper. I recollect that one of the first patients whom I permitted this liberal diet was a graduate nurse, the wife of a brother physician, and I can still see her astonishment as well as pleasure at this

innovation, the result of which was, as I expected, a most happy one.

From the time I allowed nursing mothers to eat anything and everything they desired, provided they knew from experience that it would agree with them, and since I have ceased overloading their stomach with milk and other liquids so that they could not possibly have any appetite for their regular meals, I have had comparatively little trouble with women being unable to nurse their babies.

Take my advice, subject to physician's orders, let the nursing mother have a good generous diet of wholesome home cooking and, I am sure, your experience will be the same as mine was.

A word here also in regard to the diet for young mothers in hospitals and similar institutions, because I trust that a number of you will succeed in winning the honored and important position of heads of such.

I have frequently found that the diet list in hospitals is rather a rigid affair, and that too little regard is paid to the tastes of the individual patient and to their racial and religious likes, dislikes and prejudices.

Let us say, for example, that the hospital furnishes for supper on one evening of the week wieners and potato salad; this will please the German and the Polish woman, but how about the Italian who is not accustomed to this fare, or the Jewish woman whose religion does not permit her to partake of this? Must they go hungry? Why not give the former her beloved spaghetti and the latter a salt herring? Put yourself in your patient's place occasionally and you will be the better nurse for it.

When a baby does not seem to thrive at the breast it behooves us to find the cause rather than, as is still

done so frequently, advise the mother to stop nursing.

First we must determine how much food the baby is getting from its mother. This can be done very easily by weighing the baby before and after each and every nursing, without undressing, on a good set of scales, such as I have already described. This weighing should be done for at least three days in succession in order to eliminate mistakes through any of the daily variations.

What we do when the baby is not getting enough will be told later.

Often, however, we will ascertain that the baby is really getting too much and this we can easily amend by reducing the time of nursing, naturally under the control of the scales.

A special record (Fig. 35) should be kept for this purpose and the daily weight of the naked baby should be noted on a chart just the same.

Should we find that the baby is getting the right amounts of food and that it still fails to thrive, then the physician will require samples of milk for examination. Now, the quality of the milk varies considerably from the beginning to the end of each nursing. At the time the baby is put to the breast the milk will contain very little cream, not more than one per cent. After the nursing it will show six and even more per cent of cream. In order to get a true insight into the condition of the milk, the nurse should have ten clean sterile vials with a wide neck, two for each nursing, and into one of these she expresses an amount of about five c.c. before the baby nurses; into the other the same amount after the baby is through nursing. These ten samples are then handed to the physician who turns them over to the chemist who will take exactly equal

amounts of each sample, mix these and then subject this mixed milk, which represents the whole milk for this particular day, to the same careful analysis which he employs in testing cow's milk. It is advisable to make these analyses on three consecutive days to eliminate the chance of error.

Date	Hour	Weight				Amount ounces	
		before lbs	after oz	lbs	oz		
	6 A.M.						
	10 A.M.						
	2 P.M.						
	6 P.M.						
	10 P.M.						
<u>Daily Amount</u>							
	6 A.M.						
	10 A.M.						
	2 P.M.						
	6 P.M.						
	10 P.M.						
<u>Daily Amount</u>							
	6 A.M.						
	10 A.M.						
	2 P.M.						
	6 P.M.						
	10 P.M.						
<u>Daily Amount</u>							

Fig. 35.—Three-day nursing record.

Rarely only will the chemist find a faulty composition of the milk and it is therefore a grave mistake to wean a baby that is not thriving at the breast. The nurse should never undertake this on her own account, but she must let the physician take the responsibility for this truly momentous step.

A few times only have I found that the milk was too

rich, containing an overabundance of cream, in these cases I was able to mend this by giving the baby one or two ounces of barley gruel before each nursing in order to dilute the milk.

Combined Feeding

When a mother has not enough milk to satisfy her baby, it is still of the greatest importance to give it the benefit of as much breast milk as possible and to make up the deficiency with some other food from the bottle.

The same holds also good when a mother of twins has enough for one baby only, but where we want both of them to get at least some breast milk.

Another condition which frequently necessitates combined feeding is in case the mother has to work during the day. In France, which country has the most excellent laws for the protection of babies, factories who employ any number of women must set aside a large room for a nursery where the infants are left in charge of a trained nurse and where the mothers can nurse their babies at regular intervals without being docked in their pay. We, in this country, have, unfortunately, not yet arrived at this high state of civilization; mothers who are too proud to depend upon charity must leave their babies in charge of some neighbor or friend during working hours who will have to feed the baby with the bottle at ten in the morning and at two in the afternoon, and the mother nurses her baby at six in the morning and at six and ten in the evening.

Mothers of twins can administer combined feeding quite easily as follows: Today baby A is given the breast at six in the morning and at two in the afternoon and at ten at night, and it receives the bottle at ten in

the morning and at six in the evening. Baby B is nursed at the hour at which baby A was given the bottle and is given the bottle when baby A is at the breast. Tomorrow baby A will be nursed only twice and baby B three times, and so on.

In cases in which a mother has not enough milk for her baby we can either alternate the nursings and bottle feedings; or, and this I have found much more satisfactory, we have the baby put to the breast at the regular hour five times a day and after it has taken all it can, we make up the deficiency with the bottle under the control of the scales.

For instance a baby twelve weeks old, and weighing ten pounds, receives on an average only two ounces from the breast at each nursing, then it should be given four ounces in the bottle after each nursing. In this case it is advisable to leave the baby at the breast not more than from five to ten minutes; if we leave it longer it may be too tired to take the bottle.

We must also be careful to have the holes in the nipples of the bottle small enough so that the baby has to draw out the milk, otherwise the baby will soon learn that it can get its food from the bottle with so much less effort and before long it will refuse the breast altogether as too laborious. You may doubt that small babies can do this, but, believe me, they know more than they are given credit for.

Bottle Feeding

If you expect in this chapter that I will give you recipes for the unnatural feeding of infants or if you should go even further and expect that I should tell you what is the best food to give a baby in the bottle, then you are sure to be disappointed.

For years I have been preaching in meetings of medical men, in my lectures to students and nurses, in infant welfare stations, before mothers' clubs, and at public gatherings that the unnatural feeding of infants is one of the most difficult problems of the whole field of scientific medicine. I have also maintained that this should be left entirely in the hands of the physician, preferably of the pediatrician, who has made a special study of this, and that it should never be undertaken by nurses, nor by laymen.

Too much wrong is done to babies already, and we see daily cases of infants who were born healthy and from healthy parents, but who were so unfortunate as to be denied for some good reason or otherwise the only food intended ever to be placed in a baby's mouth, namely the milk of its own mother.

How many times am I not forced to pronounce that most ominous verdict "too late" over some poor little mite who had been brought up according to the more or less complicated formulæ of some relative or neighbor, or some nurse who was assuming for herself the physician's duties, or according to the printed formula of some ignorant manufacturer of baby foods, or those contained in books intended as a guide for misguided mothers?

I shall be consistent, if anything, in this book and I shall not bolster up its pages with formulæ of which I know that they will do more harm than good.

I shall, however, give you a few general rules about the unnatural feeding of babies, so that you will, as I trust, understand the general principles underlying this most complex and complicated scientific work,—but do not misunderstand me and think that the foods we offer to babies in the bottle should be complicated

as well—and that you may know how to proceed temporarily, should you ever be in a place where a physician can not be located at once. But again let me warn you not to attempt this rashly nor without being forced to do it by circumstances over which you have no control.

Let us have, first of all, a good look at the one food which is most frequently used as a substitute for mother's milk, namely, cow's milk.

	Woman's milk	Cow's milk
Fat	4.0%	4.0%
Sugar	7.0%	4.5%
Protein	1.5%	3.5%
Salt	0.2%	0.75%
Water	87.3%	87.25%

If we compare the chemical analysis of the two kinds of milk we shall see at once that although the fat and the water are represented by equal amounts in the two, material differences exist in the amounts of sugar, protein and salt. These differences will be readily understood by you in their whole importance if you use a little common sense, which, by the way, is in my opinion at the same time the most important and least used ingredient in the artificial feeding of babies.

Woman's milk, on the one hand, is the physiologic food for the human baby, an immature organism which can not move around, is devoid of protective covering of fur to guard it against climatic changes. It grows very slowly, taking about twenty years to grow to full size. Cow's milk, on the other hand, is also a baby food, but it is not intended for human babies but for baby cows who can run around soon after birth, who have a natural protection against the cold in their

furry coat and who are fully grown inside of four short years.

Do you understand now the difference in the chemical composition of the two kinds of milk? Why human milk must contain more sugar to keep the baby warm, and why cow's milk must contain more protein to build up the muscles for running around and also more salts to build up the rapidly growing bones?

The fat in both kinds of milk is alike in quantity, but it is a well established fact based on a long line of practical experiments that the cream of cow's milk is hard to digest for infants who even may show the bad results of a continued overfeeding with the cream of mother's milk.

Few babies are able to stand a food which contains more than four per cent of cream. Even calves do not react well to this kind of overfeeding and dairymen will tell you that the calves of Jersey cows have to be taken off their mothers frequently and have to be given to other breeds of cows because they can not stand the extremely high percentage of cream found in the milk of Jersey cows. This will also explain to you why we do no longer use the milk of Jersey cows in feeding babies.

One point stands out in choosing cow's milk for babies and that is the fact that the best kind of cow's milk we can obtain is just good enough.

The ordinary market milk contains not less than fifty thousand bacteria in each c.c., many times their number runs into the million. Even the best, most carefully obtained and marketed milk, be it certified or so-called baby's milk, rarely contains less than five thousand germs in each c.c. You will easily understand that this can not be immaterial to the digestive apparatus, though

we know now that it is not so much the bacteria in the food as it is the composition of the food which really makes babies ill.

As to the use of pasteurized milk my opinion differs from that of a great many pediatricians and sanitariums. I am fully convinced that we can not transform a poor milk by pasteurization into good milk; we can not destroy by this process the poisons formed by the bacteria, and this is the reason why I stated before that the best kind of milk is just good enough for the baby.

Still, I have advised for some years to have the milk quickly brought to the boiling point as soon as it is received at the home and this for two reasons.

First: pasteurization only kills certain of the germs and thereby others as well as the more resistant spores have a better chance to grow, while boiling is more thorough in its sterilizing effect.

Second: we know that the proteins of cow's milk coagulate in the stomach into hard masses which are sometimes found in the baby's stool as tough, leathery, yellowish, bean-shaped curds,—the only real kind of curds—but by boiling cow's milk we succeed in breaking up the protein so that it will coagulate into fine curds, like human milk, in the infant's stomach and that it can, therefore, be attacked much easier by the gastric juice and thus digested.

It is not sufficient that cow's milk intended for the feeding of infants should be produced from a healthy herd of cows—we do not use one cow's milk any more—that it be milked in a sanitary stable; that the cows be carefully groomed before each milking, that the milker should wash his hands carefully before milking each cow, that he don a clean white coat and that he milk into a covered pail; that the milk be strained right

after milking, be chilled in ice, filled into sterilized bottles and then kept on ice until delivered at the home.

What is the use of all these precautions, if the deliveryman leaves the milk outside the kitchen door before daylight there to stand in the sun until it is taken into the house? Have not the germs, no matter how small their number originally, found ample time to multiply by the thousands of millions in each bottle? and do you think that this milk is still good for the baby?

Much better, in my opinion to get a good market milk, see to it that it is delivered at a convenient hour, in summer, best twice daily, and have it brought to the boiling point at once and then cooled quickly.

Suppose now that we have a good quality of milk, how are we to overcome the differences between it and human milk?

I have told you before that the fat of cow's milk is harder to digest for the infant than that of human milk, and it is for this reason that I have now for a number of years when beginning to feed a sick baby, one whose digestion was out of order, started with skim milk or with buttermilk, both of which contain about one-half per cent of cream, and then later adding the cream as I considered it safe in small and slowly increasing doses, sometimes not more than part of a teaspoonful to a whole day's feeding. To this I attribute a considerable amount of my success.

If we give a baby too much cream in its food this has to be excreted in the stools and we find in these the so-called curds which are not at all curds but fatty soaps; because the cream is split up in the intestine into glycerin and into fatty acids and these latter draw an earthy alkali, usually calcium phosphate, from the sys-

tem to form this soap; that this is not immaterial to the organism you will see later.

The large amount of protein in cow's milk can easily be reduced by diluting it, as we usually do. But, we have found out of late that the proteins of cow's milk have not a harmful effect upon the baby's digestion and that we can give them in considerable quantities; on this experience is based the use of the so-called protein or eiweiss milk.

The salts, though of no caloric value, play an important part in the metabolism and giving too much of them is not immaterial for the organism. They are also reduced in quantity by dilution. They are almost entirely contained in the whey and we must think of this when we intend to use whey mixtures; these I have given up long ago as based on erroneous reasoning.

The sugar which is already present in cow's milk in insufficient quantities is still further reduced by diluting the milk. This, however, can be rectified by the addition of one of the sugars to the food or partly by the use of cereal gruels.

Do not, however, conceive the idea that all you have to do to make a modification of cow's milk which will agree with a baby is to make the composition of the food chemically as near as that of human milk as possible. This has been attempted for decades by physicians and by the manufacturers of proprietary and patented baby foods, and, though it was a success chemically it was a failure as far as the infants were concerned. In fact we frequently succeed with foods which are almost diametrically opposite to human milk in the composition of their elements.

One important point, it seems to me, has been too frequently overlooked in the feeding of babies, and that

is that they are individuals, that they have their likes, dislikes and idiosyncrasies the same as adults, and that for this reason they frequently fail to thrive on the most wonderful formulae which are perfection chemically. In a piece of machinery we know that we have to feed it so much coal or gasoline, so much oil and so much water to make it run smoothly; not so the baby which will insist on its individuality in spite of all our chemical reasoning and experimentation.

But, you will ask me, what are we to do? What are we to give the baby in an emergency? What do you think of this or that proprietary food of which we have heard so much praise? What about condensed milk or evaporated milk?

Well as to the first question, take my advice given to you before, fight shy of undertaking the feeding of infants upon your own responsibility; leave this to the physician. If, however, you should be forced to assume this risk temporarily, then beware of mixtures containing a high percentage of cream, do not use top-milk or cream mixtures, but start with skimmed milk.

You can skim milk by letting it stand until the cream has risen and then you may dip it off with a spoon or special dipper, or you may siphon out the milk from underneath the cream.

In an emergency underfeed a baby rather than overfeed it, then you will be on the safe side at least. But you must see to it that the baby gets enough water in its food.

Now as to the proprietary and patented baby foods. I have often stated that if I could not make a better food than any one of these manufacturers I would have given up the practice of medicine, or at least of pediatrics long ago. On this as well as on so many other

points I fully agree with what my venerable friend Dr. Abraham Jacobi of New York stated thirty years ago and I can do no better than to quote his words to you:

"When an adult sits down to a meal and finds placed before him articles of food with which he is not familiar, he makes inquiries in regard to such articles before eating them. The baby, however, is credulously fed upon things with which the child, father, mother, or doctor has not the least familiarity; many of which have a composition unknown to the public, although sold in large quantities. When some manufacturers deign to say anything about their merchandise, it is to the effect that the food offered is the best in the market, that it is the proper thing and the only thing for children and invalids of all ages, that the relation of the albuminous substances to carbohydrates is exactly correct, and that a package costs a certain amount of money. In regard to this subject the public appear to be smitten with absolute blindness. They insist upon forgetting that the man who offers for sale, and advertises at a very heavy expense, does so, as society is constituted, for his pecuniary advantage. To say that if the article offered is not good, it will find no market, is deceiving ourselves, experimenting on our babies, relying on the character of a single man or corporation, on the honesty or intelligence of the manufacturer's chemist, or his superintendent, or his workman, on the nature and condition of the elements used in the composition of the article, and on ever so many influences, which can work before the manufactured article gets into the hands of the consumer. Why the sellers and advertisers of unknown compounds should be more trusted than those who sell a simple article of food, such as milk, which is constantly adulterated, can hardly be perceived. Is it

necessary to say that the factory furnace is lighted more in the interest of the proprietor than for the benefit of the public?"

This is the opinion of a man, a humanitarian physician, a close observer, one who believes in uttering his candid opinions regardless of the hue and cry they may raise, and who at that time was able to look back upon more than thirty years of practice and teaching of pediatrics. Need I say much more upon this point?

The proprietary foods contain almost universally large amounts of carbohydrates, either as milk sugar or as malt sugar, some also as cane sugar, and others as starch; the amount of fat and proteins varies still more in different brands. None of them are really foods that may be given to a baby with perfect safety, though some few of them could be used advantageously as malt sugar, if it was not for the misleading advertising literature and the formula accompanying each package.

Concerning the milk preserves, we must hold apart the condensed milks which are sweetened with about forty per cent of cane sugar and which are condensed to about one quarter their original volume, from the evaporated milks which are unsweetened and are reduced only by about one quarter their original volume. The condensed milks should not be used for babies under any conditions, the evaporated milks may be used in an emergency, such as a long trip, especially a sea voyage, for a specified short time, but as a permanent food they can not be condemned too severely. They are often the favorite food given by ignorant foreigners to their babies and I see their evil results daily in my dispensary work.

Little is needed for the successful bottle feeding of babies; a few utensils for measuring the quantities of

the different ingredients; good clean milk; a few things which are found in every household or can be bought at the corner grocery.

Remember in this connection also that nothing is easier for a nurse than to spend other people's money lavishly; but that it is in many cases hard enough for the parents to pay even the nurse's salary.

I would advise you also to avoid special measuring glasses, on which the percentages of the different ingredients are indicated, and the rotary indicators recommended for the same purpose. It is much better for you to learn how to figure out these proportions for yourselves and you will not only be less likely to make mistakes, but you will be doing your work intelligently because thoughtfully.

The bottles used for feeding babies should have a wide neck, so that they can be cleaned easily, and they should not have any sharp edges in the bottom (Fig. 36.) In hospitals I have frequently seen ordinary medicine bottles used as nursing bottles; this may be economical, but I consider it very bad practice.

New bottles should be boiled for fifteen minutes in water to anneal the glass thus making it less breakable. The bottles should be rinsed immediately after feeding and boiled in soda solution once daily.

The nipples should be big enough so that they can be turned inside out for cleansing. (Fig. 37.) It is better to buy unperforated nipples and make the hole of the desired size with a hot darning needle. The nipples should be washed immediately after use; they should be boiled once a day, and when not in use it is better to keep them dry between a folded towel or in a covered glass jar, than to keep them in a solution of boric acid all the time, because this will spoil the rubber quickly.

You should have six bottles with their nipples on hand, one for each of the five feedings and one in case of accident.

If the milk is delivered once a day, then you will best make up the whole day's feeding in the morning and it is advisable to have the extra bottle also filled, because one might be broken or spilled. If the milk is



Fig. 36.—Nursing bottles.

delivered twice a day, especially in summer, you will have to prepare the food morning and evening.

When the food is ready it should be poured into the bottles and a sheet of white paper fastened over the top with a rubber band (Fig. 38) and the bottles set in the ice box; specially small ice boxes for babies are most convenient.

You must not rely upon the marking upon the bot-

tles indicating the different quantities without having this verified by your own measuring.

A baby must not be left alone with a bottle, because it may spill it and then you can not tell how much it has actually taken. Whenever this is possible, but surely with sick or weakly babies, you must hold the bottle.

Note on the chart the amount of food the baby has taken at each feeding, and throw away any food remaining in the bottle; this must not be given at a sub-



Fig. 37.—Rubber nipples.

sequent feeding, this would be false economy because the food may spoil between feedings and make the baby sick.

When a baby is sick you should also note how it takes its food, if greedily and very rapidly or slowly with interruptions; this will help the physician quite often in making a diagnosis.

If a baby should vomit note how soon after a feeding this happened and the character not only of the vomited matter but also of the vomiting itself. Remember also

that spitting up food is always a sign of something being wrong and tell the physician about it.

I hope that in the foregoing pages I have impressed you with the difficulties with which we meet when we have to feed a baby unnaturally, but I trust that I have not gone so far as to give you the idea that to do this successfully is impossible or even rare. It is done daily and a chart like Fig. 39 will prove this to you.



Fig. 38.—How to keep bottles.

But, because this particular baby did so very well on the food I had prescribed was for me not sufficient reason to say that other babies should also thrive on the same formula and therefore to announce to the world that I have succeeded in producing a perfect baby food or to have the formula printed and handed out to mothers and nurses indiscriminately.

Let me tell you that I do not possess such a thing as a formula for feeding infants; I have learned years ago that babies will not thrive on formulæ, that every baby is a law unto itself and that we must let it determine

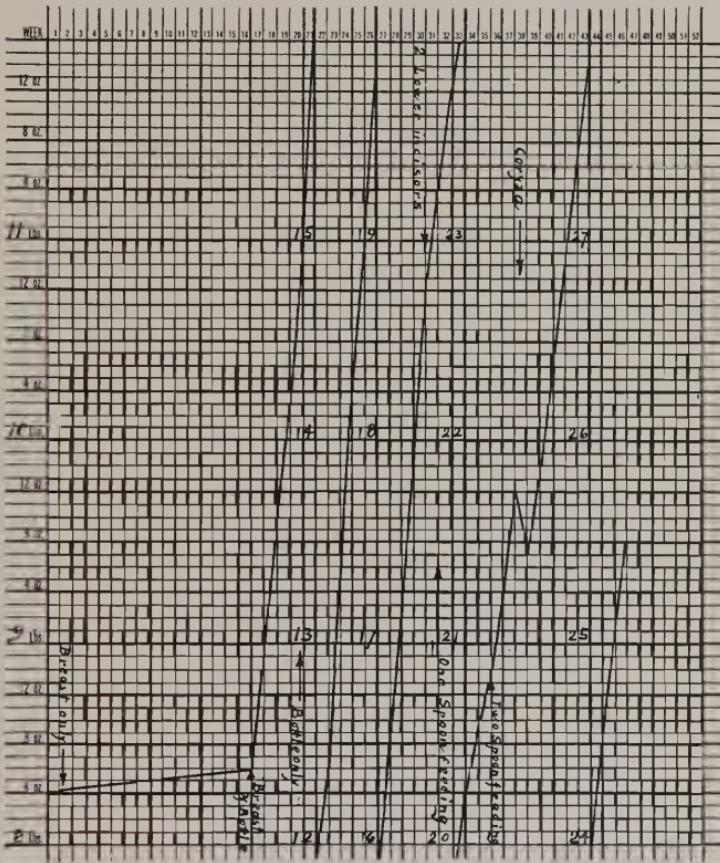


Fig. 39.—Chart of healthy bottle baby.

for itself what is the best food. In order to do this one must be familiar with every one of the ingredients of the food, with their caloric values, their advantages and disadvantages, and their physiologic action; then only,

when we have these data at the tips of our fingers, to be used at any moment, shall we be successful in a reasonable proportion of our cases.

Feeding of Young Children

Under this heading I shall also include the feeding of infants with other foods except those given in the bottle to avoid repetition.

When the baby has reached the age of six months it is usually advisable to give it one spoon feeding instead of one bottle, usually at two in the afternoon.

Both human milk and cow's milk are deficient in iron. At birth the infant has a store of iron in its liver which will last it for about six months, but after this period it requires this mineral from other sources, otherwise it will be pale and anemic as we can see every day.

For the first spoon feeding I use either farina pap made of two teaspoonfuls of farina boiled in eight ounces of milk, or cream of wheat prepared the same way, or zwieback pap made by rolling three zwieback or three slices of dry toast with a rolling pin and then boiling this with eight ounces of milk. These paps are sometimes taken by the baby without the least trouble, other babies object to this unaccustomed kind of food and mode of feeding quite strenuously; they refuse to swallow it and often spit it out and it will then take considerable patience and also strategy to overcome the baby's strong will power. But, if we only persist long enough and make the baby understand that it will have to make the best of an unpleasant situation, then we will succeed.

Do not get cross with the baby, nor scold it, remember that when you were small you did not always like to take things your mother thought it best for you to

have. I have found frequently that nurses will succeed where the mother has failed, because the baby knows that it can not impose upon strangers as it can upon its mother, who is liable to show in her face that she is sorry for the baby and that she really would rather not make it take the food.

Orange juice I give now quite frequently to very young babies, as early as six weeks of age and even younger; but, when they have not received this before they surely should have it when they are six months old. Oranges not only contain iron but also other valuable constituents as we will see later. Should the orange be sour then we sweeten the juice by adding a little bicarbonate of soda.

When the baby has completed its seventh month of life I give it another spoon feeding, preferably a vegetable soup, made without meat stock. A very good recipe for this is one I have modified from the advice of a French author. Take two ounces of carrots (one medium sized carrot), two ounces of potatoes (one small potato), one ounce of turnips (one-half of a small turnip), one ounce of spinach or lettuce leaves (one handful), one ounce (one heaped tablespoonful) of dried beans, peas, lentils, or of pearl barley, one-half teaspoonful of salt and one quart of fresh water, put this into a stew-pan, cover well and allow it to simmer on the back of the stove for four hours or place it into a fireless cooker over night; then strain it through a hairsieve bringing it up to one quart by the addition of boiled water. Before feeding it is thickened by crumbling up some dry toast in it. This is a very healthful dish not only for babies but also for young children.

The baby is fed thus until it is nine months old, and its daily dietary would be like this:

- 6 A.M. breast or bottle.
- 9 A.M. two teaspoonfuls to one tablespoonful
of orange juice.
- 10 A.M. farina pap.
- 2 P.M. vegetable soup.
- 5 P.M. orange juice.
- 6 P.M. breast or bottle.
- 10 P.M. breast or bottle.

A few ounces of water are to be given between meals.

At nine months a breast baby should be weaned. This is best for both mother and infant. A healthy baby may be weaned to plain cow's milk, in weaker ones it will be advisable to put them on modified milk; bottle babies may be kept for some time longer on the modification on which they have been thriving.

It is not always an easy matter to wean a nursing baby and in many of my cases have I called upon the assistance of a nurse for this purpose alone. It is much easier to succeed when we can keep the mother out of the sight of the baby for a few days until it has forgotten; frequently I have sent the mother away on a visit.

During the second year of life milk is still one of the most important parts of the child's diet, but it should not be used to the exclusion of other foods; nor must we give too much of it. I have found that one pint of cow's milk daily is plenty for a child at this age and in special cases, in which I thought this advisable, young children got along very nicely on one-half pint only.

We are liable to overlook the fact that cow's milk is, after all, a baby food the same as mother's milk and therefore not intended for older organisms.

Another fact which we are liable to forget, is that nature intended the baby's teeth for use and not for ornament, and this should also be a guidance to us in the choice of food for a child in the second year. It

should be given harder articles of diet such as dry toast, graham wafers, zwieback, Holland rusks, and similar things. It should also have vegetables in the form of purees, especially spinach, lettuce, carrots and potatoes. We may give it stewed fruits, of which prune pulp is one of the best, also raw grated apples. Strained cereals and well cooked rice, but not thickly covered with sugar, and with milk instead of cream.

My opinion as to eggs for young children has undergone a change within the last few years. I have seen so many cases in which I was convinced that eggs were not advisable that I have almost entirely given up their use as an article of diet during the first two years of life, and advise their addition sparingly even after this age. In my opinion eggs are overestimated as an article of diet, and they are also very expensive, especially the newly laid kind, the only ones which are fit for use.

Broth I have also given up in the feeding of young children. It is essentially a solution of salt, its nourishing qualities are infinitesimal—three pints of broth contain no more nourishment than one small cup of milk or one egg. Beef tea is a stimulant and, therefore, belongs in the same class with tea, coffee and alcohol, which may be used medicinally upon the physician's orders for a limited time but should not be given regularly to children.

Meat I also give only rarely during the first two years of life.

Between the ages of twelve and fifteen months, sometimes a little later in weakly children, they should get accustomed to be satisfied with four meals daily, after the eighteenth month we feed them only three times daily, giving the heaviest meal, containing one-half of

their daily allowance at noon and one-quarter of their daily allowance each at breakfast and supper.

I have seen a good many young children who were brought to me for advice because the mothers thought they had no appetite. Upon changing their feeding by reducing it from five meals to three meals daily their appetite returned and they did well again.

A food which has lately come into more general use, though it has been one of the principal articles of diet of many Chinese and Japanese for centuries, is the soy bean. They contain a large amount, forty-four per cent, of proteins, twenty per cent of fat and ten per cent of sugar, but no starch. I have used them extensively for some years now with very gratifying results. They may be cooked like ordinary beans or as soup, or one of the prepared flours may be used in many different ways.

The nurse should remember the few general rules for the feeding of young children which I shall now give:

1. The proteins in the food are used for growth and for the substitution of the body substance which has been used up. The child requires not more than ten per cent of its daily allowance in the form of proteins, one-half of this should be furnished as animal proteins, the other will be supplied in the cereals and vegetables.

2. The carbohydrates which are used up for heat and energy are the most essential part of the food of the young child.

3. The fat is used for heat and protection and also is stored up in the body for future use in times of need such as long continued illness.

4. The proportion of carbohydrates to fat in the food should be about six to seven parts of the former by weight to one part of the latter; this would be in cal-

ories about twice as many calories from carbohydrates as from fat.

5. The caloric needs of the child are determined by its age and weight; the younger the child the more calories does it require for each pound of weight daily, about forty calories after the completion of the first year of life and from twenty-five to thirty calories when it is two years old.

6. The general condition of the child and its constitutional differences are also of importance in determining its caloric requirements. Some children do better on larger amounts of food, others again on small amounts.

7. The keynote in the successful feeding of children is individualizing; we can not feed children according to any hard and fast rules.

If you will adhere to these rules you will succeed in a goodly number of cases.

THE FEEDING OF OLDER CHILDREN

With the completion of the second year of life the main difficulties accruing from the digestive organs are usually surmounted.

The child may now more and more partake of the fare of the family table with the exception of all dishes which are highly seasoned.

It may now have an occasional egg or a little meat once a day, but its principal food should still be made up of cereals, vegetables and fruits.

The cereals need now no longer be strained but may be served with the hulls.

Of the vegetables the coarser kinds such as the different members of the cabbage family may be added to the dietary.

Of the fruits, all those with pits, and the berries, at

first with their seeds strained out may be enjoyed. Strawberries I do not allow children to have until they are six years old on account of the hooked spicules which may irritate the intestinal mucosa.

The caloric needs of the child will gradually come closer to those of the adult and the nurse should acquaint herself with the caloric values of the foods mostly used so that she can tell if the child's demands are met.

In order to make this easier for you I have made out a list of some of the commoner foods with their caloric values, telling which part of the calories is made up of the proteins, which of the carbohydrates and also the fat. The single portions represented in this list are approximately one hundred calories and I have rounded them off for the sake of convenience, but they are still sufficiently accurate for your use.

FOOD	AMOUNT	CALORIES		
		Protein	Fat	Carbo-hydrates
Whole milk	5 oz.	20	50	30
Skim milk	10 oz.	40	10	50
Cream	2 oz.	10	80	10
Buttermilk	10 oz.	40	10	50
Whey	13 oz.	10	10	80
Curds	2 oz.	25	70	5
Skim milk cheese.....	1 $\frac{2}{3}$ oz.	75	25	—
Cream cheese	$\frac{3}{4}$ oz.	30	70	—
Butter	$\frac{1}{2}$ oz.	—	100	—
Olive oil	$\frac{1}{2}$ oz.	—	100	—
Egg	one large	30	70	—
Scrambled eggs	1 $\frac{1}{2}$ oz.	25	75	—
Meat broth	3 pints	30	70	—
Boiled beef	1 $\frac{2}{3}$ oz.	40	60	—
Roast beef or chop.....	1 $\frac{1}{2}$ oz.	65	35	—
Roast pork	$\frac{3}{4}$ oz.	20	80	—
Roast lamb	1 $\frac{2}{3}$ oz.	50	50	—
Roast veal or chicken.....	2 oz.	70	30	—
Boiled chicken	2 oz.	75	25	—

FOOD	AMOUNT	CALORIES		
		Protein	Fat	Carbo-hydrates
Boiled fish	3 oz.	90	10	—
Salted fish	1½ oz.	30	70	—
Smoked fish	1½ oz.	50	50	—
Ham	⅔ oz.	25	75	—
Lean bacon	⅔ oz.	10	90	—
Potato	one medium	5	15	80
Bread	one slice	15	5	80
Zwiebaek	one	10	5	85
Cocoa	three teaspoonfuls	15	30	55
Cooked cereal	one cup	10	15	75
Rice boiled in water.....	12 oz.	10	15	75
Rice boiled in milk.....	4 oz.	10	20	70
Farina boiled in water.....	9 oz.	10	20	70
Farina boiled in milk.....	3 oz.	15	20	65
Pea or bean soup.....	one-half cup	30	15	55
Thick pea soup or white beans.	¼ cup	25	20	55
Green peas	4½ oz.	25	—	75
String beans	9 oz.	20	—	80
Spinach	7 oz.	30	40	30
Cabbage	12 oz.	10	55	35
Purple cabbage	12 oz.	30	10	60
Cauliflower	12 oz.	30	10	60
Brussels sprouts	8 oz.	35	10	55
Carrots	10 oz.	10	5	85
Turnips	8 oz.	10	10	80
Oyster plant	6 oz.	5	5	90
Asparagus	18 oz.	40	5	55
Tomatoes	18 oz.	15	5	80
Cucumber	24 oz.	30	10	60
Radishes	18 oz.	20	10	70
Rhubarb	18 oz.	10	20	70
Chestnuts	¾ oz.	10	10	80
Banana	one large	5	5	90
Grapes	4 oz.	5	—	95
Cherries	6 oz.	10	—	90
Apple, pear, orange.....	one large	5	—	95
Dried fruit	four prunes	5	—	95
Sugar	two tablespoonfuls	—	—	100

Milk will not be found so prominent in the child's menu, nor is it so necessary at this stage. Frequently children will refuse it altogether when they are four or five years old, because they are tired of it. If the child should still be willing to take it then it should be served with the breakfast and the supper, but not with dinner. It is better, when children are likely to drink rapidly from glass or cup, to have it eaten with a spoon, that is to serve it with the cereal or with bread.

A very good beverage for children and one which they like as a rule is cocoa.

We must also see at this age that the child drinks enough, but not too much, water. Many a child is constipated because it does not get enough water and some cases of constipation respond very nicely to a glass of fresh water taken upon arising in the morning.

After dinner a long nap should still be insisted upon and will help the active child and save its nervous system.

Digestive disturbances of older children are frequently due to overeating, especially on holidays and at children's parties, and then especially the sweets and candies are to blame. The best treatment for these simple gastric disturbances is a full dose of castor oil and two or three days of a diet restricted to gruels without milk. Should the gastric trouble be accompanied by fever, then the physician must be consulted.

You must take care that the child's menu shows sufficient variety as even the best and most wholesome food will become tiresome and be refused if it is served too often. Think of the man who bet that he could eat quail thirty days in succession and who—lost his bet.

Most children will show an aversion against some food, frequently some vegetable or other, though some

children do not like vegetables of any kind because they have not been brought up rightly. But where they show an aversion to only a few of these you should find out, if this is simply in imitation of some older member of the family or due to some notion; or if it might not be due to the fact that the child knows either instinctively or from experience that this particular food does not agree with it.

Within the last few years very interesting studies have been made which show that certain people are very susceptible to some of the food proteins which act upon them as a poison.

You may have seen or at least heard of the, luckily rare, cases where cow's milk will produce anaphylactic shock in even minute quantities. Other cases are similarly affected by the egg proteins and still others by the proteins of all kinds of vegetables, meats, fruits and even cereals.

These persons react to the intradermic administration of even infinitesimal quantities of these proteins in a similar way as a tuberculous person will react to the von Pirquet skin test. It has been found out that such persons may show different kinds of symptoms after they have partaken of foods containing the particular protein to which they are sensitive. Whenever you meet with a case in which you suspect this you should call the physician's attention to this at once.

Quiz

What is colostrum?

When does the milk appear?

What is the composition of mother's milk and its caloric value?

Why is mother's milk best for the baby?

Why do mothers object to nursing?

When must a mother not nurse her baby?

Should the nurse decide if a mother may nurse her baby?
How often should a baby nurse and at what intervals?
What is the first need after birth, of both mother and baby?
What happens when we feed a baby too often?
How should a mother nurse her baby in bed?
How should a mother nurse her baby sitting up?
What is the areola?
What difficulties may the baby offer to nursing?
How do we overcome the difficulties a baby offers to nursing?
How are the breasts cared for?
What causes cracked nipples?
How should you bandage the breasts?
What would you do for caked breasts?
How many minutes should a baby nurse?
How much breast milk does a baby require?
What may a nursing mother eat?
How do we find out how much a baby gets at the breast?
How do we examine the quality of the mother's milk?
What do we understand by combined feeding?
How can a working woman nurse her baby?
How can twins be nursed?
What can we do for a mother who has not enough milk?
What is the composition of cow's milk?
What is the difference between mother's milk and cow's milk?
Why do mother's milk and cow's milk differ?
Should you use Jersey milk in infant feeding?
Why do we boil milk and how long?
Is pasteurized milk good for babies?
How should cow's milk for babies be gained?
Which is the most dangerous element in cow's milk?
Is the protein in cow's milk harmful for the baby?
Is it sufficient to make cow's milk chemically like mother's milk
to have the baby thrive?
Why is skim milk safer for babies?
How can you skim the milk?
Are patented and proprietary foods good for babies?
What is the difference between condensed and evaporated milk?
Are milk preserves good for babies?
Which are the best nursing bottles and nipples?
How should you take care of the bottles and nipples?
How many bottles should you have?

How should you keep the bottles when prepared?
What should you observe when a baby is vomiting?
Can we have a formula for feeding babies?
When should we give a baby other food and why?
When may orange juice be given to a baby?
When should a baby be weaned?
How much milk should a baby get during its second year?
What may be given to a child eighteen months old?
Are eggs good for young children?
Is broth good for children?
How often should a child fourteen months old and one nineteen
months old be fed?
What are the general rules for feeding young children?
What would you give a child four years old to eat?
Should a child drink water?
What is meant by food idiosyncrasy?

CHAPTER V

THE DISTURBANCES OF NUTRITION IN INFANTS

We now come to the disturbances of nutrition in infants, or, as we would have called them only a few years ago, the gastrointestinal diseases of infancy.

This has always appeared to be a most complex subject, but since we have learned that in these disorders disturbances of assimilation play the principal role, we have been able to simplify this seeming chaos of pathologic conditions, and, in classifying them under different heads, to make them easier understood.

In using the term "disturbances of nutrition" we express clearly that we consider these conditions now to be due to abnormal digestion which affects the whole organism of the child. At the same time it reminds us of the fact that the nutrition of the child is of paramount importance. We do not, however, claim that metabolism must be the primary cause of these disorders, knowing, as we do, that it may not be the cause at all but only a secondary condition.

All attempts to refer these conditions to anatomical changes in the gastrointestinal canal, or to arrange them according to our bacteriologic findings, have failed signally and we have now, at last, succeeded in classifying them without being obliged to strain our imagination.

While they may be found occasionally in breast babies

they comprise mostly those infants who have not had this advantage or for too short a time.

The following classification seems to me to be the best:

I. CHILDREN WITH A NORMAL DISPOSITION

A. Due to Feeding

1. Simple overfeeding and its consequences.
2. Simple underfeeding and its consequences.
3. One-sided feeding too long continued.
 - a. With cream.
 - b. With carbohydrates.

B. Due to Infection

1. Infection of the gastrointestinal canal.
2. Parenteral infection.
 - a. With normal appetite and consequent relative overfeeding.
 - b. With diminished appetite.

C. Due to Heat

1. Direct effect and consequent damage to entire organism.
2. Indirect effect; relative overfeeding due to diminished digestion.

II. CHILDREN WITH AN ABNORMAL DISPOSITION

A. Abnormal Constitution

B. Abnormal Formation of the Body

1. Malformations of single organs.
2. Disturbances of the development of the entire body.

Let us first understand what is meant by children with a normal or abnormal disposition.

Under children with a normal disposition we class those children who were born perfectly healthy and who come from healthy stock, but whose powers of assimilation have been weakened by one of the three causes mentioned above, either through faulty feeding, or through infections, or finally through atmospheric conditions.

Children with an abnormal disposition are of two kinds. They may either be handicapped by constitutional weakness such as premature children or children born from syphilitic or tuberculous parents. Or they may suffer from some malformations of single organs only, such as hairlip, cleft palate, partial or total occlusion of some part of the digestive tract, etc., or finally they may be suffering from disturbance of the development of the whole body, they may be excessively large or small, or the secretions of some of their endocrine glands may be defective or lacking.

We will now assume that a perfectly healthy baby that is getting in the bottle a food which agrees with it, and which has hitherto been gaining steadily, suddenly fails to gain in weight and that its weight remains stationary. We figure what he is getting and find that his daily ration does no longer come up to forty-five calories per pound owing to the fact that he has gained considerably since his food was last changed. We know from his age, weight and behavior that he can readily take about one-half ounce more in his bottle, and our reasoning is shown to have been right by the normal reaction of the baby to this increase in food, he immediately starts to gain again and his stools and temperature remain normal as they were before. (Fig. 40, Chart A).

Now let us assume that we have another baby of the

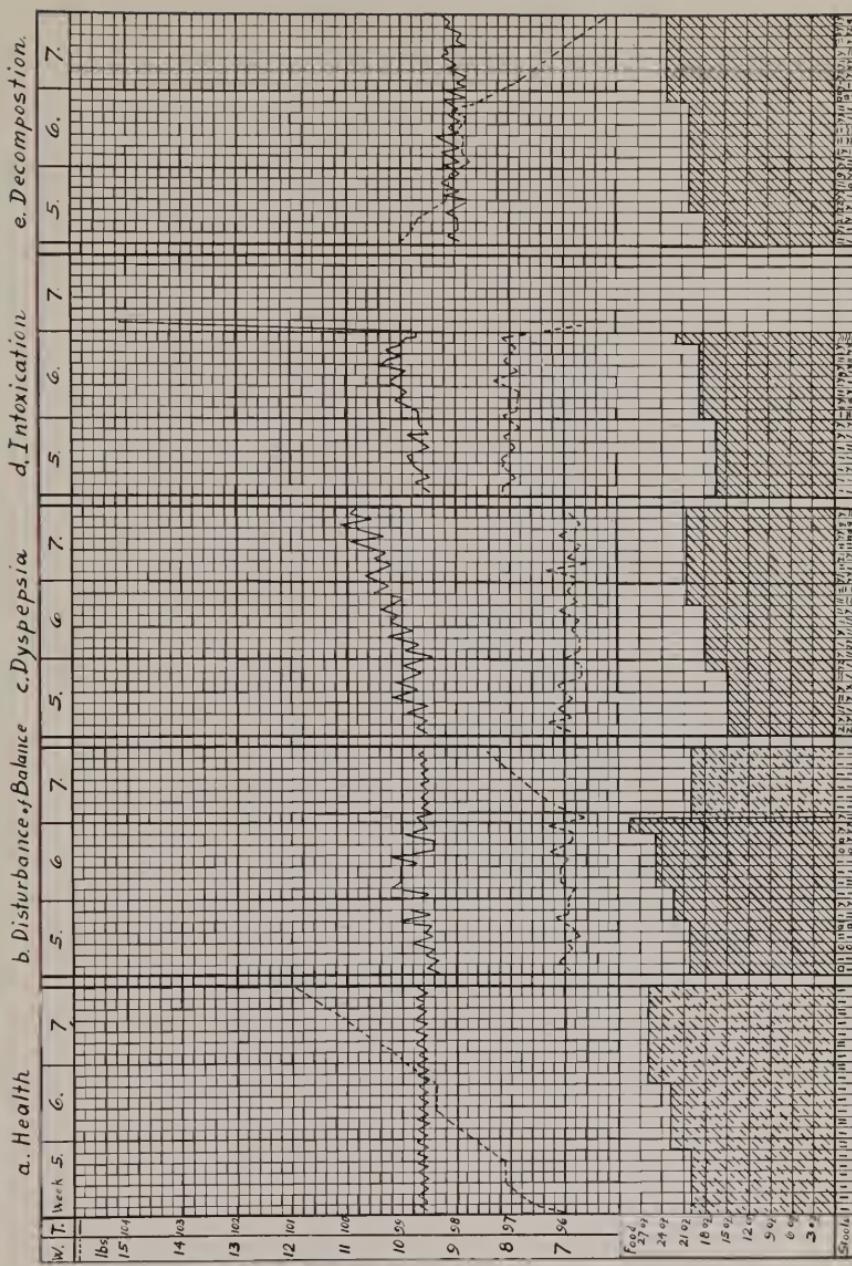


Fig. 40.—The disturbances in nutrition in infants.

same age and weight, whose stools are not good, but are sometimes a little more frequent and of changing quality, showing that his food is not exactly right for him. The infant is pale and restless; its abdomen will be found to be slightly distended with gas; nature may try to mend matters by occasional spitting up of the food, the daily excursions of his temperature are a little larger than normal, though we can not call it fever and his weight is variable, he gains one day to loose this or even a little more the next. You fully realize that he is not doing well but upon the urgent demand of the anxious mother or the grandmother who is sure you are starving the baby anyhow, you increase his food one-half ounce to each feeding but without result. This baby is no longer healthy, its nutrition is disturbed, though only slightly, the balance between the baby and its food is no longer right, because the assimilation of the food demands so much work from the baby's system that nothing is left for a gain. This is the lightest form of digestive disturbance, which has been called "disturbance of balance," to indicate its cause. If you recognize this in time and call in the physician he will change the food and reduce its quantity, and lo and behold, the baby's stools get better at once, his temperature shows no more than the normal excursions and it begins to gain again. (Fig. 40, Chart B).

Let us assume, however, that the mother will not listen to your request to have the physician called, but that she listens to the advice of her mother, or of some neighbor who knows that all that is the matter with the baby is that it is starved, that the food is all right but that the poor baby never was given enough under your foolish four-hour feeding; "who ever heard of letting a poor baby go for so long without food and then to top

it all will not give anything at night? We know better than the doctor with his newfangled notions, we have had babies of our own and we know all about their bringing up." They tell you to feed the baby every two hours and twice during the night.

If you are a good nurse and know about these things you will resign from this case at once; if you are weak you will do as told by the family and what is sure to happen is this: The baby will be quite restless, its sleep will be disturbed; it will lose its appetite; its abdomen will be distended with gas which comes up at frequent intervals, it is colicky; its stools also get really bad and at times diarrheic; the temperature goes up to the verge of fever, and the weight is still variable, the gain of one day being replaced by the loss of the next.

We now have the second stage of nutritional disturbance, a true "dyspepsia." (Fig. 40, Chart C.)

The only remedy is to reduce the amount and the strength of the food which will help in some of the lighter cases. In the severer ones the food has to be changed entirely as well as reduced in amount, and even then it will take the infant some time to recover from this illness which, though the principal symptoms are from the gastrointestinal tract, affects the whole system as is evidenced by the temperature.

Should this condition still be overlooked, or rather misunderstood, and should the feeding be still further increased, then we may observe one of two things.

A sudden catastrophe will set in. The child will become unconscious, though the mother thinks it is only tired out and sleepy, we can see by the faraway look in its sunken eyes that this is not so; the temperature takes a sudden jump; the respiration is of a peculiar character and labored; the urine contains considerable

amounts of albumin; the baby may vomit profusely, this however, is not a constant symptom, nor is the profuse diarrhea which we frequently observe at this stage. From these two last-named symptoms the disease acquired the name of "cholera infantum" or "summer complaint" because it was considered to be more frequent in very hot weather; let me assure you, however, that I see it quite as frequently in winter. We now call it "alimentary intoxication," which is a much better name because it tells us that the food is now acting as a poison and this is also shown in the fact that the administration of food makes the baby worse. (Fig. 40, Chart D.)

With, and on account of, the foregoing symptoms the baby will lose weight suddenly and rapidly, a pound in twenty-four hours being nothing unusual; this is due to increase in the loss of water through diarrhea, vomiting, and the labored respiration. This makes the baby suddenly look extremely ill; its eyes are sunken and surrounded by a black ring; its skin is dry, hot and flabby; it is bluish from the poor circulation; altogether a pitiful picture, which is at the same time most ominous.

In other cases we do not observe these sudden disastrous changes, but the picture is a more chronic one, perhaps because the child possesses more natural resistance—let me tell you here that it is truly wonderful how much a little baby can oftentimes stand—and does not succumb so easily. Here we observe an entirely different picture. The baby is extremely thin, nothing but skin and bones, with the face of a very old person; the mouth is dry and red, and it is mostly open because the poor infant is dried out and, therefore, extremely thirsty; the abdomen is much enlarged and distended with gas; the baby is very restless and sleeps very little;

on its skin we often find infections in the form of furuncles or abscesses, and intertrigo, soreness around the anus and buttocks. (Fig. 40, Chart E.)

This is the condition which we used to call "marasmus" or "atrophy." Now we call it more aptly "decomposition" to indicate that the child has to live upon its own body substance and must decompose its store of fat, sugar and even muscular tissue in order to live.

An interesting phenomenon in these cases is the way in which the little patient reacts to an increase in its food, be this quantitatively or qualitatively, instead of the normal reaction of a healthy baby which would show a gain in weight, we now observe a loss of weight following this increase, the so-called "paradox reaction."

In warning young mothers against overfeeding their babies we frightened some of them into making the opposite mistake namely of starving them. This we observe mostly in mothers who have read a great many books on children and on infant feeding. I have, therefore, observed this condition most frequently in the babies of former nurses and of college graduates. Provided that the baby is at the breast or that it is getting a sensible food at the right intervals, and that this underfeeding has not been taking place for too long a time, so that the baby's organism has really suffered from it, then it is not dangerous. The baby will be thin, but not emaciated; its skin will be less elastic than normal; its abdomen will be found caved in; its stools are rare and brown in color, a so-called starvation stool; its weight is stationary.

Upon proceeding to feed such a baby it will promptly react by the disappearance of all these symptoms and by a steady gain in weight. (Fig. 41.)

Should a baby be weakened by this underfeeding, and still more if its health should have been undermined by an intercurrent infection, then it may not be able to assimilate the food when it is finally offered to it and

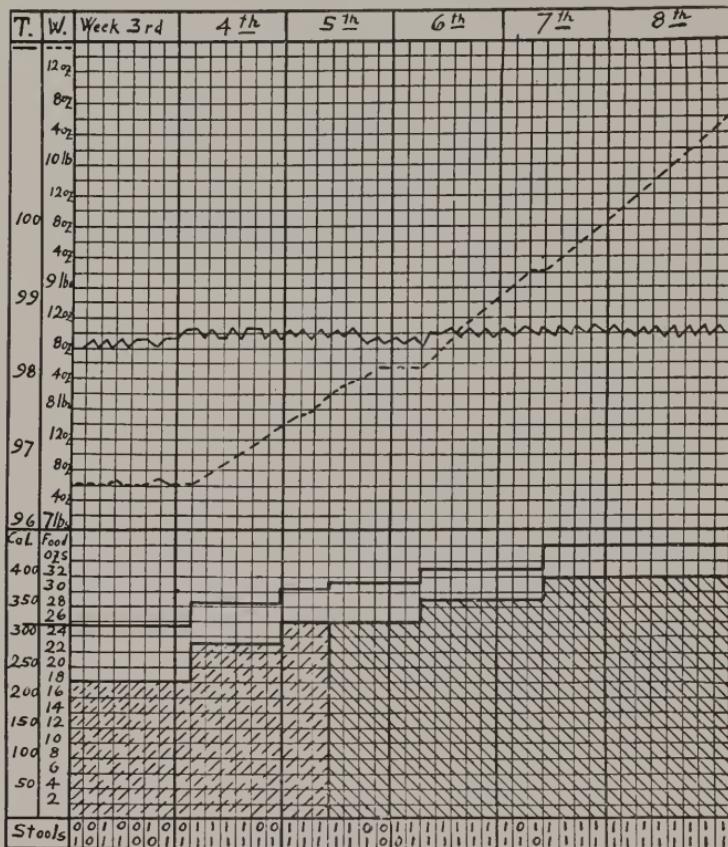


Fig. 41.—Chart of underfed baby.

it may die from starvation. But, let me tell you, these cases are quite rare.

We have seen that the quality as well as the quantity of the food will cause disturbances and it therefore

behooves us now to investigate if we can tell which one of the elements of the food is responsible in a given case.

Up to recent times the protein was considered the one component of the milk which was usually at the bottom of all digestive disturbances in bottle babies, most likely because the large amount of it in cow's milk in comparison to mother's milk was so evident, but, we have learned that the proteins may be given in even larger amounts than those in cow's milk without doing any harm, and we have learned to look upon this element of the food as one with which we need not be particularly careful.

Everything, even water, when given in excess is harmful and you must, therefore, not think that you can with safety proceed to give as much of the proteins as you want. You should know that a preponderance of albuminous material in the food causes an alkaline reaction of the stool on account of the putrefaction going on in the intestine during the destruction of the surplus proteins.

The carbohydrates cause a fermentation in the intestine and the stools give an acid reaction when they prevail in the food.

Babies who have been overfed with carbohydrates for any length of time, as, for instance, those brought up on any one of the majority of patented and proprietary foods, will look rather well and stout, but upon closer examination we can convince ourselves that they are not solid and firm, as the healthy baby should be, that on the contrary they are soft and flabby. This is because they are waterlogged, which means that they look stout because the large amounts of carbohydrates in their food cause an abnormal retention of water in their system. Let their power of assimilating these large

amounts of carbohydrates break down suddenly, as happens so often, and their weight will take a correspondingly sudden drop; the more so as the loose brown stools which these children void as a rule will become diarrheic quite readily.

Let me tell you that the pictures which you find in the booklets sent out by some of the manufacturers of these foods with high percentages of carbohydrates are not those of healthy infants; they may look stout enough, but if you had a chance to see these babies and look them over carefully you would find them big on account of the water retained in their bodies and you would find furthermore that their skin is not a healthy pink but rather pale and with blemishes due to the frequent infections from which these babies suffer, and last, but not least, that they usually have rickets, of which we will speak later.

Quite different again is the condition of the babies who receive too much cream in their food.

They are also pale and flabby, but besides this they are less lively, their sleep is disturbed, their abdomen distended with gas, their weight remains stationary or their chart shows a steady loss in weight; let us increase their food without changing its quality and they will present the paradox reaction of which I have spoken before. Their stools will contain large amounts of fat, in the form of fatty soaps, as much as fifty per cent at times, and they will then be rather hard, dry, yellowish gray lumps which frequently roll out of the napkin when you change the baby.

If these babies, who are suffering from one-sided overfeeding, are not taken in hand by the physician in good time, then those overfed with carbohydrates may develop alimentary intoxication at any moment, those

overfed with fat are the ones who will frequently present the picture of decomposition.

I trust that I have succeeded in the foregoing sketches in making it clear to you how grave a problem the feeding of babies presents even to the physician.

So far we have been following cases in which the feeding and the metabolism were at fault.

We now come to those infants in whom the invasion of the system by bacteria is the primary cause of their nutritional disturbance.

First we will speak of those relatively few cases in which the bacteria get into the gastrointestinal tract and here cause an infection of the mucous membranes. Formerly we thought and taught that this was of frequent occurrence, but of late we have learned that most of those cases in which we blamed the bacteria in spoiled food or poor milk are due to a wrong composition of the food.

Still we do see these cases occasionally and the pus and shreds of mucous membrane in the diarrheic stools will tell the story. Sometimes we observe these infections in the newborn, even before food has been given, and then they may be due to the swallowing of infectious amniotic fluid.

Much more frequent and, therefore, of much greater importance are the cases in which the infection takes hold in some other part of the body, outside the intestine, and we then call them "parenteral."

Every form of infection, no matter in which part of the body, which makes the child ill will exert an unfavorable influence upon the general condition of the body.

Is it to be wondered at, then, that in infants, in whom nutrition and growth are of the utmost importance, even slight infections which would not distress the older or-

ganism may be and usually will be a serious matter on account of the disturbance of nutrition caused by it?

Take, for instance, a slight coryza, which in us would mean an inconvenience at most, and watch its effect upon the child's metabolism as shown in its chart. (Fig. 39.)

The first thing which we will notice in a case of this kind will be that the little patient will no longer be able to digest the same proper amount of a perfectly suitable food given at the right intervals, not even its mother's milk, after it has been thriving on this nicely before. If we persist in the same amount and quality of feeding it will soon show the signs of overfeeding or a dyspepsia.

The baby is feverish from the original infection and therefore thirsty. Should we neglect nature's warning and quench this thirst with food instead of water, then we will surely increase the overfeeding and thus make our little patient worse, because where we had only relative overfeeding before from the proper amount of food, we will now cause positive overfeeding from the excessive quantity of food we are giving.

Let me tell you that in this way a good many cases of dyspepsia in babies find their origin.

Fortunately kind Nature frequently helps us in this and saves the baby's health by taking away its appetite and making it refuse all food; would you then try to improve upon Nature.

Only when the infection is of a severe degree and long continued shall we have to insist upon feeding the baby and this is then an extremely difficult matter, even for the physician.

We come now to those disturbances of nutrition which

are due to heat and of these we shall first contemplate the direct effects of heat.

In the densely populated districts of our large cities, where little air can pass through the cañons between houses, where parks and similar breathing spots are few and far between; where the fire escape is often the only means of getting relief; and where, owing to the crowded conditions, and to poverty, the baby spends its days and nights in the same single room in which the cooking and washing is done, which serves as living room, workshop and bedroom at the same time, here it is where we will most frequently meet with the direct effect of the high temperatures of the summer months.

This will cause the picture of true sunstroke. The baby has very high fever, it is in coma and suffers from collapse, it refuses all food, even the much needed water, and if aid is not forthcoming soon it will often die suddenly.

Quite different from this picture is that of the indirect effect of heat.

The baby is able to regulate the temperature of its body even in considerable climatic temperatures, so that it can maintain its body at the physiologic level. Still we must acknowledge that the extreme summer heat prevailing at times without any relief at night, especially when the atmosphere is at the same time surcharged with moisture, will and does influence the digestion of the infant.

Should the baby continue now to have a good appetite then it will quite readily suffer from the bad effects of relative overfeeding if we persist in giving it the food in the same strength in which we have been giving it. The baby is naturally quite thirsty from the loss of water through its skin and its respirations, by

which means it is able to stand the heat; should we now make the grave mistake of quenching its thirst with food then we will make it worse because we will substitute positive overfeeding for the relative overfeeding which injured its nutrition before.

We must not, however, forget that injudicious clothing which is practised upon the baby, not only by ignorant foreigners, is a contributory cause, as is bad housing.

I have taught for years that during the hot summer days the baby should be out on the shady porch or in the park or some other relatively cool place as much of the twenty-four hours as possible and that all it should then wear is a gauze shirt, diaper and a smile, the latter coming of itself because the baby feels comfortable.

The poor quality of the milk which is liable to contain many more bacteria at this season may be to blame to some extent, but its importance is not as great as we used to think.

Undoubtedly these disturbances of nutrition caused by the effect of heat have something to do with the increase in the mortality among infants in summer; but we must not forget that the babies who suffer the most are those who have entered this season with an impaired digestion.

We also know that there is a parallel increase in the mortality among infants during the winter months due to poor hygienic conditions, lack of fresh air and frequent infections with the so-called "colds" of which we will speak later.

Up to a comparatively short time ago we thought that all we had to do in order to be successful in feeding infants was to find the right food for any baby, give it

this in the right amounts and at the proper intervals and the result would be good health in the baby.

Of late years we have learned, however, that the feeding of infants is not quite so simple a matter. Not only have we got to find the right food but we must also find out what kind of a baby we have to deal with, that we are up against that bugbear of algebra the equation with two unknown, the wrestling with which you will undoubtedly remember from your high school days.

This is what I mean when I speak of disturbances of digestion due to an abnormal constitution.

No matter how well a baby may look at birth, we will never be able to tell how it will thrive, even on breast milk, and this is due to certain abnormalities of constitution, some of which may be inherited, others acquired.

Of the former we have the transmission of an infection such as syphilis, or the peculiar weakness frequently found in the offspring of tuberculous parents; also a condition predisposing to swelling of the lymphatic apparatus and to eczema; and many more.

Such as are acquired may be due to poor hygiene, or to faulty feeding, like, for instance, the case of a baby two weeks old who has been given a food containing large amounts of cream from the day of its birth with the result that its power for the assimilation of fat was so weakened for many months that I had to bring him up on an almost fat-free food. (Fig. 42.)

Coming now to the malformations of single organs, I need only mention to you the difficulties which you will have with infants with a cleft palate in whom the food will return through the nose; or those in whom nature failed in making the anus meet the lower end of the rectum; the infants with extrophy of the bladder and

those with spina bifida, who are so easily infected; and many more.

Finally the disturbances in the development of the whole body may be due to some arrest of growth at a

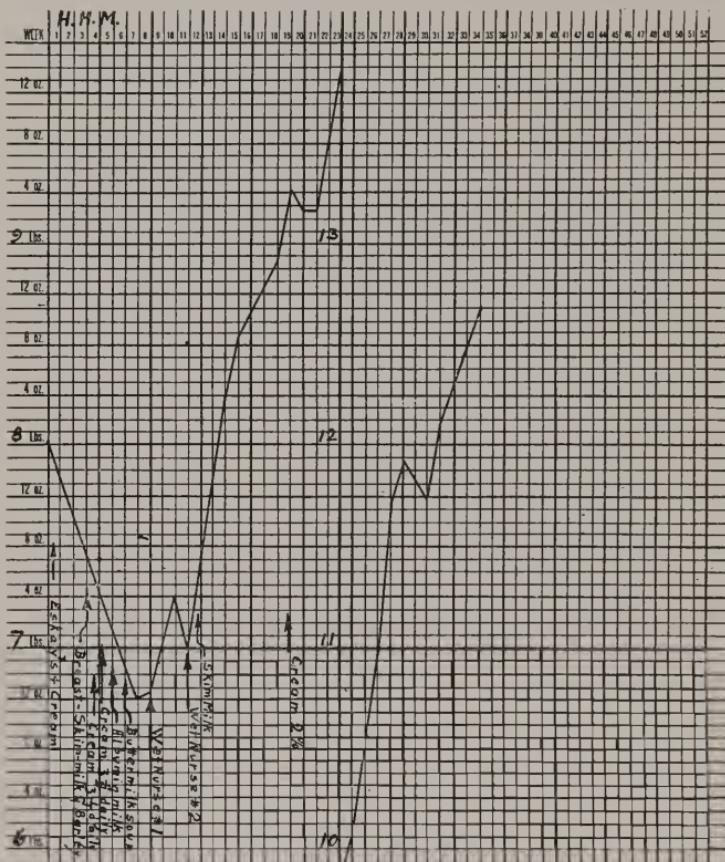


Fig. 42.—Chart of intolerance for cream.

more or less early stage of fetal life, or to an over-secretion or to insufficient secretion of some one or several of the glands with internal secretions such as the thyroid.

Quiz

- What do we mean by disturbance of nutrition?
- What do we understand by the disposition of a child?
- What is the normal reaction to an increase in food of a baby?
- What is disturbance of balance?
- What is dyspepsia in a baby?
- What is alimentary intoxication?
- What is decomposition in a baby?
- What do we understand by paradox reaction?
- What do we understand by underfeeding?
- What is the result of carbohydrate overfeeding?
- What are the results of overfeeding with fat?
- Is intestinal infection in babies frequent?
- What is meant by parenteral infection?
- What is the effect of heat upon the baby?
- What should you do during very hot weather?
- What do we mean by abnormal constitution?

CHAPTER VI

DISEASES CAUSED BY ABNORMAL METABOLISM

Babies and young children suffer by no means rarely from diseases which are due to abnormal metabolism and which are, therefore, also due to a large extent to the mode of feeding. Of these we will first take up rachitis.

Rachitis or, as it is also called, rickets, is a disease which is not only found in bottle babies, as most of the textbooks will tell you, but we observe it quite frequently in breast babies.

It is a disease of the temperate zone, being rare in the tropics and the frigid zone as well as in high mountainous countries.

The disposition toward it is inherited, though it is preventable and does not appear in all the children of the same parents. I have often been able to find the sure remnants of rickets in mothers who brought their babies to me for this; and when they were accompanied by their own mother I was able to verify this well-founded suspicion quite readily.

In the northern states of this country rachitis is very prevalent, especially among the negroes and Italians; it is also found very often in the offspring of Polish immigrants and, though less often, all through the mixed population of this great country.

In the negro population of our large cities, especially, we rarely see babies who are not affected by this

disease, and this though they are breast fed for longer even than necessary. The explanation for this can readily be found in the fact that these people were transported originally from the tropics to the West Indies and to our Southern States, where they lived an outdoor life and where closed doors and windows were unknown.

The Italians in this country come mostly from the Southern provinces and from Sicily, they were small farmers and truck gardeners at home, where they were also living outdoors almost all the time.

Let these people come over here and let them live herded together in crowded tenements under the most unsanitary conditions and you will understand that their babies at least are sure to suffer from this change.

In literature you will be able to find many theories regarding the origin of rachitis, which are too numerous and contradictory to give, as they would only tend to confuse. From these, however, I have culled what seemed to me to be most reasonable and I shall give you this for what it is worth, it is at least a good working hypothesis.

I hold that rachitis is a combination of poor hygiene and bad feeding.

It is then due to ignorance or neglect or a combination of the two.

Do not think that you will meet with rachitis only in your work among the foreigners, or among the poor, and therefore in your dispensary work. Many a baby in a wealthy family is neglected even under the, seemingly, best of care, and ignorance is quite as prevalent among the well-to-do as it is among the lowly.

The poor hygiene consists in the lack of fresh air, especially during the winter months, when the windows

are kept shut tightly and the poor baby is often not taken out for an airing from fall until spring.

Have you ever been in a tenement during the winter? Have you ever had the suffocating experience of entering one of those one-room apartments where the cooking and washing was done, where the family slept and ate and worked? Have you ever looked at the baby left to itself most of the time and bathed in its own dejecta? Do you remember that terrible stench which made you sick and to which you thought you could never get accustomed?

Do you wonder then that rickets is so prevalent?

The poor care consists in the rare changing of the infant. Did you ever watch an Italian mother bind her baby "to keep its limbs straight" as she will tell you, with a band about four inches wide and long enough to go around the room? Did you notice how long it will take her to do this? How often do you think this baby will be changed during twenty-four hours?

Or, have you seen a Hungarian baby dressed and then placed upon a feather pillow, which most likely has served for this purpose for generations, and then tied up securely in this so that only the face was seen?

Or, have you ever called upon a Polish family and found the mother busy at the wash tub, with the floor of the kitchen all wet with soapsuds and in midst of this was the baby sitting on the wet floor, clothed only in a thin cotton slip, without diapers, but with a heavy knitted cap on its head, bare-legged, but with patent-leather shoes on its feet?

Understand me please, I am not making fun of these poor ignorant people, I am only relating to you what you will be sure to find in your daily work, after you leave training school, and I am trying to explain to you

why you meet these babies in the hospital and dispensary.

But look at the reverse side of the medal; go to the homes of the wealthy, to the residence streets, and to the parks in the fashionable neighborhood, and watch the pale babies in charge of some elderly practical nurse who has ignorance and conceit written all over her face.

If you take a look at these babies you will find that many of them are perspiring because they are overdressed; they have on a knitted jacket and a heavy coat over their other clothes. Over their diapers they wear rubber drawers so that they do not wet the feather bed upon which they are resting, their head is buried in a feather pillow, and they are covered with a thick comforter, and all this when the temperature is 70° above zero; but then the nurse will tell you that it is April according to the calendar. If you could look into that baby's home you would find that the baby stays in a room the temperature of which is never lower than 70° and that it is always overdressed and therefore in a continuous Turkish bath, so to say. Do you understand now what I mean when I state that these babies also are neglected?

Of course these babies perspire all the time and are naturally weakened by this, and owing to their thirst they will also most likely be overfed.

The other babies who are allowed to lie in their disintegrating urine, inhale the ammonia thus formed. On approaching one of these infants and getting a whiff of this ammoniacal odor you will frequently be able to foretell that the baby will most likely be suffering from rachitis.

Poor hygiene and neglect are really only contributory

causes of this disease, while the most potent factor in its production is bad feeding.

Overfeeding, the most frequent form of bad feeding, is to be held responsible for it.

The breast baby, which is fed every two hours or every time it wants to, is quite as much overfed as the bottle baby which gets too much food. The element of the food which, in my opinion is to blame as the cause of rickets is the fat.

One of two things may happen, either the food is too rich in cream altogether, or the food contains an over-supply of carbohydrates, and this interferes with the proper digestion of the fat, as we have seen before.

Now, what happens? The fat which can not be digested, has to be excreted. In order to be excreted, the fat has to be split up in the intestine into the innocuous glycerin and into fatty acids. These latter can not be excreted as such, but are transformed into a fatty acid soap by uniting with an earthy alkali. This earthy alkali is found in the body mostly in the form of phosphate of calcium in the bones. In case of need the body will draw upon these deposits of phosphate of calcium and rickets results. You will readily understand how this is more likely to happen in children who have inherited a predisposition toward this disease, and how the contributory causes will further this abnormal process.

Rachitis usually appears during the second half of the first year of life, the time when the effects of bad feeding are mostly in evidence.

The principal signs of it are in the bones which are softened by it and then may become deformed. The pathologic condition in the bones causes considerable pain, and rickety babies have a peculiar yelling cry.

They perspire a great deal, especially over the back of the head, then the perspiration irritates the skin here and they rub their head on the pillow which produces the characteristic baldness, or at least thinness of the hair, over the back of the head of these little patients.

Rachitis is a disease which can easily be prevented or cured in its lighter forms by proper hygiene, care and feeding.

In my opinion one of the most important results in our work in infant welfare stations, consists in our teaching mothers that it does not kill the baby to bring it to us there, even in winter, and thus to teach them the advantage of fresh air.

All these severe cases of rickets, as we see them so frequently on our streets are a damaging testimony of somebody's ignorance or neglect.

That rickets can be prevented quite easily has been shown recently by the most meritorious work of one of my medical friends in New York City. He succeeded in teaching the colored mothers inhabiting the Columbus Hill district the value of prophylaxis and early treatment and his results were so evident even to them that many brought their children on their own account or on the advice of some happy neighbor, to have their babies made well and straight again.

Another form of disturbance of the metabolism is **infantile scurvy**.

If an infant should be fed exclusively on cow's milk which has been pasteurized repeatedly, or which has been sterilized by prolonged boiling—bringing the milk rapidly to the boiling point and then cooling it, does not seem to have the same effect—it may develop this disease.

The heat applied to the milk destroys certain hypo-

thetic substances in it to which the name "vitamines" has been given. These vitamines are necessary for the health of babies and they are present also in mother's milk, and for this reason breast babies are free from this affection.

The disease consists in hemorrhages under the periosteum, in the skin and mucous membranes. The gums are a favorite site for hemorrhages, but only around the teeth.

Scurvy appears in babies between the ages of six and eighteen months. The baby is anemic, and it cries from pain whenever it is touched or moved; it is especially frequent in infants with rickets, because the deficient hygiene in these will act as a contributory cause.

The vitamines are present not only in raw milk, but also in fruits and vegetables, and giving these to babies early, as for instance orange juice, acts as a prophylactic.

I have not seen it develop in any of the infants I have had under my care in infant welfare stations, and in a large orphan asylum, because I insist on their getting orange juice at a very early age.

A constitutional abnormality, peculiar to infants and young children, is a condition which we now call **spasmophilia** and which shows up first at about five months of age.

It is observed in three forms.

First and most frequent of these is the so-called spasm of the larynx, also called staying away or internal convulsions. The child stops breathing suddenly and then after some seconds will resume breathing with a loud crowing noise.

Second the infant may show peculiar spasms in some of its muscles, affecting at times one or more extremities,

which will then assume peculiar positions. At the same time its nervous system will be in a state of irritability, and responds to electrical irritation with characteristic reactions.

Third the infant may have general convulsions with loss of consciousness, and these may affect the whole body or only a part of it.

Spasmophilia appears usually at the end of the winter and in bottle babies who are given large amounts of cow's milk which contains much cream. It is also observed in overfed breast babies.

It is, in my opinion, due to a faulty calcium metabolism and it is for this reason often observed in infants suffering from rachitis.

A case of spasmophilia must never be considered as light; a child may be attacked by spasm of the larynx out of apparent good health, and it may die in the first or in any one of the subsequent attacks.

You must handle these little patients with great care; they must be saved from every kind of excitement and must not be crossed.

During the general convulsions nothing is better than absolute rest and good air, to see to this is all you should do until the arrival of the physician.

What usually happens however is this:

Let us say a baby which has, as the mother believed, been in good health, is taken suddenly with convulsions. The first thing the frantic mother will do is to go out on the front porch or in the back yard and shout for help, to which the women in the neighborhood respond with alacrity.

If you are living in the neighborhood you will be surely sent for, and by the time you arrive this picture will strike your eyes: The baby is lying in the hot

kitchen on the lap of Mrs. A. who strokes and rubs its limbs; Mrs. B. insists on opening the hands because the thumbs must not be drawn in; Mrs. C. applies cold wet cloths to the little patient's head; Mrs. D. is preparing a mustard bath; Mrs. E, a fountain syringe for an enema; other women are doing something else, everybody is very busy crowding the little kitchen which is like a steam bath.

The first thing for you to do is to get the poor baby out of all this hubbub as quickly as possible; get rid of all these well-meaning, but officious women, who will only hinder you, the mother included, take the baby into an airy bedroom, put it into a bed to warm its body which has been chilled by all the handling it has been subjected to and quietly await the arrival of the physician.

Formerly we met with many conditions in infants and children which we were not able to explain anatomically, but of the presence of which we were aware by many symptoms. Many of these we are now able to group under what is called **exudative diathesis or lymphatism**.

These children are subject to enlargement of the lymph glands and when they get older they will frequently have enlarged tonsils and adenoids. They show very little resistance to infections; they have frequent "colds," attacks of bronchitis, and by no means rarely will they develop asthma. They also are subject to eczema.

The predisposition to this constitutional disturbance is inherited, but as it is favored by overfeeding with animal food, it can be overcome by careful regulation of the diet, and by hygienic living.

Quiz

What is the other name for rickets?

Is rickets frequent in breast fed babies?

What causes rickets?

Has clothing anything to do with rickets?

Has feeding anything to do with rickets?

In what part of the body does rickets show mostly?

Can rickets be prevented?

What is infantile scurvy?

What is deficient in the food in infantile scurvy?

Can we prevent infantile scurvy, and how?

What do we mean by internal convulsions?

What causes convulsions?

What should you do for a baby in convulsions?

CHAPTER VII

THE EXAMINATION OF THE CHILD

In no way can you better fit yourself for your profession than by developing your powers of observation and by training your senses in such a way that you will not only be able to tell the normal functions and behavior of your patients, but, that you will also be accustomed to tell, sometimes at a glance, that everything is not well with your charge.

If you have developed these faculties and are in the habit of using them every second, you will be in a position to call the physician's attention to any, even the slightest change from the normal, you will many times save your patient from serious illness and from suffering. What more noble duties can be imagined?

You must also know beforehand how you will be enabled to help the physician in his examination of the child, a thing not always easy, and to anticipate his slightest move and intention; thus only will he be in a position to perfect his diagnosis.

To aid you in learning these details, and to perfect yourself the following chapter is devoted.

After the baby is born you should look it over most carefully, and this is best done during its first bath. Do not be afraid of ridicule but call the physician's attention to every detail, no matter how slight, which does seem to you to vary from the normal. He is the one to decide if it is of any importance or not.

Your inspection should cover the entire body, front as well as back.

You should note any abnormalities of the skin, if there are any blemishes, marks or scars.

Are the normal openings of the body present or has the infant an imperforated anus, or a deformity of the eyes, the ears, the nose, mouth, or has it a cleft palate?

Note any abnormal swellings, not only those caused by the birth, but also those it might have brought into the world.

Pay attention to the size, position and shape of the extremities; if the baby moves them all equally well or not.

Watch if the baby passes meconium or urine, also if it vomits.

Listen to its breathing and also to its cry, if it is lusty or only a moan.

Inspect the stump of the cord and find out that there is no bleeding from it and that it is tied securely; also that there are no abnormalities around the navel.

Then, when the baby is dressed and in its bed go over frequently and ascertain that it is all right and comfortable; if it is sleeping soundly, if it assumes the normal position similar to the one it occupied in the uterus, with the knees slightly bent and the arms upward, and the hands above the head.

The daily inspections should be repeated every time you undress the baby.

You must watch for a possible discharge from its eyes during the first week and report its presence to the physician at once.

It is of great importance, too, to know if the baby has the snuffles during its first two weeks. Do not make light of this and think it is only "a slight cold."

The child's skin should be red or pink, not blue; especially not during its crying; even the slightest erup-

tion deserves attention, some of these you will perceive better when you are not too near the part you want to inspect. Soreness around the anus and buttocks must be reported to the physician at once.

The motions of the limbs should also be watched very carefully at this time, sometimes you will notice that the baby does not move one of these at all, and the physician will find the cause for this.

Let me warn you again not to keep any of these observations of yours to yourself, no matter how trivial they may appear to you. If you do you will wrong your patient and the physician as well. The latter is the only one who can determine the importance and cause of any abnormal phenomena.

In older babies it is equally important for you to be most observant.

A great deal can be learned from the baby's cry. It is his only means of expressing himself. It is his language.

A continuous cry, perhaps with the fist in its mouth may indicate hunger, and will stop when food is given. Do not, however, explain every crying spell in this way; it is not as frequent as you may have thought. This kind of a cry may also indicate that the baby is thirsty and really wants a drink of water and not food. Do not forget this, as is so often done.

The baby may cry from pain. A colicky cry is spasmodic and during it the legs will be drawn upon the abdomen. If from other pain such as earache, which is very frequent, or from a pin pricking it, the cry will be loud, sharp and continuous.

A frequent cause of the baby's crying is that it is wet or otherwise uncomfortable. Whenever a child cries you should examine its diapers, and if these

should be dry take the baby up and straighten out its clothes.

A sleepy baby will cry because it does not want to go to sleep, then it will give a few cries, loud at first, then weaker, finally a sigh or two and it is asleep.

Babies learn soon that when they want attention all they have to do is to cry, and to cry long enough. As soon as they are taken up they will stop, to renew their demands whenever they are put back to bed. This is most frequently observed in spoiled babies, or in those who have been sick, or have not had the right training from the very first.

Older infants and young children will cry from fear. They are afraid when they wake up in the dark, and when you have soothed them with a few kind words they will sleep again.

The cry from bad temper can hardly be mistaken for anything else, it is usually a sign of a spoiled baby.

Premature babies usually do not cry loudly but moan or whimper; so do other weakly infants, especially those with atelectasis.

In babies who are ill, principally those suffering from pneumonia, the cry is very significant, a loud, lusty cry will usually indicate a favorable prognosis, while a hoarse whine is a bad sign.

The temperature of young children must be taken in the rectum with a thermometer the bulb of which has been greased with vaseline. See to it that the thermometer is really introduced far enough, and that at the same time it does not strike the wall of the rectum. Its pressure thus hurts the child. Young babies may stay in their bed during this procedure, older infants you should lay across your lap on their stomach, so that they can not break the instrument should they

squirm. If you acquire sufficient practice in this important procedure, and learn how to do it gently, the child will usually not mind it at all.

Very important too is that you should note the quality of cough, if it is loose or dry, barking or croupy, how long each attack lasts, if it is repeated soon and comes at frequent intervals, or is rare; also if it is more liable to come at certain times of the day.

The respirations of babies should be counted, especially during illness, by laying the hand upon the infant's chest; you should also note the type of breathing and any change in this. Be especially careful to watch for the employment of the auxiliary respiratory muscles, such as movements of the nostrils during inspiration and in older children if they lean upon their hands to aid breathing.

The pulse should be counted for a full minute, this you can do by placing your finger upon the radial artery or over the heart, but still more conveniently over the carotid or the fontanel.

Watch also the condition of the fontanel; if it should be tense or bulging or sunken in, this should be reported to the physician at once.

Keep track of the number of times the baby wets itself, also if it is scalded by the urine and still more important if it cries every time it urinates.

I have spoken before of the way in which you should note the number and quality of the stools. It is also necessary to observe any peculiar odor; how they are passed if forced out or squirted out, or with gas, and further if they are of a normal quantity or only enough to soil the napkin slightly each time you change it.

Look for slight lumps under the skin which may mean swollen glands due to a local or general infec-

tion. They will show especially on the neck, in the nape, under the chin and jaws, in the groins and above the elbows.

Look into the infant's mouth and find out if there are any white spots.

Be very careful to report to the physician at once when a discharge comes from either ear, or if the child should put its hand frequently to one side of the head, and also if one cheek is reddened more than the other.

Watch if the baby holds its head straight, or habitually more to one side, and keep a record of the physiologic processes such as holding up the head when carried, sitting up, the first tooth and so on. Everyone of these data may mean much to the physician; especially if the infant should lose the faculty or the inclination of doing any of these things.

You should also be aware of it if the baby should be afraid of being touched or moved; and also if it should then cry as from pain.

The condition of the abdomen is also worthy of your continuous attention; if it is abnormally distended or large, if it is sunken and flat, or if large veins are to be seen upon it; also if it is unevenly distended.

In girl babies you should be on the lookout for a vaginal discharge, especially in institutional children, where these cases must be called to the attention of the physician at once so that they can be isolated and given special care.

In boys the genitals should also be regularly inspected and abnormalities, such as a swelling, etc., reported.

Nor should you be satisfied with carefully examining babies when undressed, but you should be continuously watching its every movement.

You should be present as often as possible when the mother nurses it and see if it can swallow well and how it nurses. If it nurses right through without letting the nipple go, or if it has to interrupt the act every few seconds to get its breath, this latter fact should be told the physician at once.

I do not claim that this list of the things and condition which you should watch is by any means complete; the careful nurse can undoubtedly add many more. But, what I intended to bring out, and I trust I have done so, is to teach you how many things you should be thinking of when entrusted with the care of a baby and that you must not perform your work automatically and unthinkingly.

When you expect the physician's visit be sure to have everything that you know from experience he might need in readiness, so that you do not have to hustle around when you hear him coming and thus waste his valuable time.

Have the room warm and the windows and doors closed, but the air must be good all the same, remember that it is not only cold air that is fresh air.

Upon a small table which must be solidly built, not a card table or a sewing table, you have placed a soft pillow and a blanket, so that the child can be put on this and partially covered for examination.

In a covered pail you have the last napkins soiled by the baby's stools; and, if necessary have a clean bottle filled with about one ounce of its urine.

I have frequently found it very difficult to obtain a sample of the baby's urine for the simple reason that the nurse did not know how to collect it, although this is really quite simple.

In boys you take a solid test tube of fair size, fold

some adhesive plaster around the edge of it and then fasten it over the penis with a couple of strips of adhesive plaster and leave it inside the diaper until you have succeeded in getting your sample.

In girls you take the same kind of test tube and fas-



Fig. 43.—Holding baby for examination of back of chest.

ten it with strips of plaster over the vulva; this is ever so much better than collecting the urine in absorbent cotton and then wringing this out, or to take a sample from the chamber where it is likely to be contaminated by germs and also by stool.

Your chart should be lying upon the table brought up to the minute. Any medicines the baby has been getting should be within easy reach, also the last prescription for the baby's food and one of the bottles with the food ready for feeding.



Fig. 44.—Holding baby for examination of front of chest.

Should the baby have vomited recently this must also be preserved in a clean bowl or the pieces of clothing soiled by it should be on hand.

Get the vaseline for the thermometer, a bottle of alcohol and a cloth to clean it; a wash bowl, soap and towel—but please not a new one which will not take

up moisture—for the physician's hands. Now after undressing the baby until all it wears is its shirt, napkin and nightgown, wrap it up in a blanket and you can now serenely await the physician's arrival.

Every physician will appreciate greatly if you know



Fig. 45.—Holding baby for examination of throat.

how to hold the baby during his examination, and during minor surgical operations, or for the administration or application of medicines.

For the examination of the back of the chest the baby should be sitting on your forearm, its face over your shoulder, your free hand should hold its head

(Fig. 43). For that of the front of the chest your one arm should press the baby against you, while the free hand holds its arms above its head which is pressed against your shoulder (Fig. 44).

When the throat is to be examined hold the baby



Fig. 46.—Holding baby for examination of ear.

against you, pinning down the arms, the other hand steadyng the head (Fig. 45) or the physician may want to hold the infant's head and then you use your free hand to hold its body.

When the physician desires to examine the baby's ear you hold it with one hand sideways against you and

hold its head tightly against your shoulder, but keep your arm out of the way of the light (Fig. 46).

For all this you will either stand up or sit down, as the physician may desire.

For the inspection of the eyelids you will place the



Fig. 47.—Examination of baby's eye.

baby across your lap, its head resting upon your knee, or upon the pillow on the table. (Fig. 47).

It is very important for you to know how to hold the baby for a lumbar puncture, a slight and painless method of investigation which may be of inestimable value not only for diagnosis but also as a therapeutic measure.

A small baby, or an older infant that is unconscious, is placed with its back well over the edge of the pillow, now you stand on the opposite side of the table, facing the baby, grasp its buttocks with one hand and the upper part of its back with the other and then



Fig. 48.—Holding infant for lumbar puncture.

hold it tightly so that it can not move, and at the same time arch its spine toward the physician. You should always have three sterile test tubes with sterile cotton stoppers standing ready in a tumbler at the physician's elbow, when you expect him to do this (Fig. 48).

For older and stronger babies, and also for older

children it will be better to hold them in a different way, in which you will have a firmer grip upon the child. You now stand at one side of the child facing it, as it is sitting upon the edge of a firm table, its back slightly over it. Now you pull its hands through between its legs, grasp each of its hands with one of



Fig. 49-A.—Holding older child for lumbar puncture, sitting.
Front view.

your own from outside its thighs, and catch its head under your armpit which is nearest to it, and hold it there tightly between your upper arm and your body. In this way you can hold the child perfectly still for the comparatively few seconds which are consumed in a lumbar puncture without any aid (Figs. 49 A and B).

If you do not hold the child firmly, as I have told

you, so that it can not move its spine, you may be responsible for the breaking off of the needle in the spine, and it will then sometimes be rather difficult to recover the broken end. But let me tell you when one of these accidents should happen,—and they will, and do happen to the most experienced physician—then comes



Fig. 49-B.—Holding older child for lumbar puncture, sitting.
Back view.

the time when you can show your true loyalty to him and thus to your noble profession. No matter what happens, you must never show any surprise or any excitement by your expression or by your gestures, you must act as if this were an everyday occurrence, yes, as if it were a part of the operation. Remember that many

people, not only the so-called ignorant ones, are naturally suspicious of everything the physician does, especially when it is something of which they may not have heard before. They will be watching him and you still more, and your slightest indication of surprise or excitement may forever destroy their faith in your friend, the physician.

Let me tell you here further, that you should be, if possible, even more careful in guarding your tongue; an indication of doubt in the physician's ability or judgment, even by a single word, or the belittling of one of the measures ordered by him will only too quickly end his usefulness in this case, and thereby may endanger your patient's life.

So remember, keep yourself in hand, be loyal to the last ditch; then only will you be worthy of the name of a "trained nurse."

In older children you may require a sheet to overcome their greater muscular powers, and knowing how to hold them will help you materially, it will save your temper and will prevent a disgraceful fight. (Fig. 50.)

Never try to deceive the child, it will never forget if you have lied to it. Should you know that the examination, or the slight operation, is going to be disagreeable or even painful, warn the child of this beforehand. What is the use of telling the child a lie when he is sure to feel the evidence in his own body that you have deceived him? And do not let the mother, nor the grandmother, tell him that he is not to be hurt. Many a time have I been obliged to give them a scolding right before the child. But when they were sensible they saw that I was right, and I kept their friendship as well as that of the child, even if I did hurt it.

To hold an older, perhaps unruly child, for an ex-

amination or slight operation upon its mouth, throat or nose, you take it upon your lap with its back towards you, take its legs between your own, locking the feet, then put your arms under the child's holding them between your upper arm and forearm, and your hands holding its head against your chest. (Fig. 51.)

You may also roll the child in a blanket with its arms



Fig. 50.—Holding older child for lumbar puncture, lying down.

at its side, and this is especially good for the examination of the ear. (Fig. 52.)

When holding a child for the physician, who is using a reflector, you must be careful not to get any part of your body between this and the source of light.

For the examination of its abdomen the physician will want the child to be placed upon the table, and you

can then make it much easier for him by keeping the legs slightly flexed in the knees to relax the abdominal muscles.

For gavage, washing out of the stomach, roll the child



Fig. 51.—Holding older child for examination of throat.

in a blanket, its legs between yours, its head against your chest. Babies are laid upon the table. The physician will now take a small stomach tube, or in babies a soft rubber catheter, he dips this into warm water,

keeps the tongue of the patient down with the first finger of one hand, while the other inserts the tube into the esophagus by a slightly rotary motion. The tube will usually slide into the proper passage quite readily,



Fig. 52.—Rolling child in blanket for examination of ear.

especially when the child is crying, but should it go into the larynx you can hear this by the whistling sound made by the air going through the rubber tube.

When the tube has been pushed in so as to be in the stomach a small piece of glass tubing is put into the end of the stomach tube, then over this is slipped a rubber tube of the proper size and into the other end of this



Fig. 53.—Gavage.

is slipped a funnel. Watch the physician very carefully how he proceeds in this because he will frequently ask you to do this by yourself in his absence. (Fig. 53.)

For intubation of the larynx you hold the child in the same way, but one of your hands must be kept free to

grasp the mouth gag used in this procedure. (Fig. 54.)

When the physician has to open an abscess on the posterior pharyngeal wall, a so-called retropharyngeal abscess, which is by no means rare in babies, you hold



Fig. 54.—Holding child for intubation.

the child tightly as for an examination of the throat but as soon as the abscess has been opened the physician will usually expect you to move the child forward so that the pus will run out of its mouth and will not be aspirated.

Naturally every physician will have his own method, and you should follow his every slightest suggestion or change; but he may also leave it to you to see how you can hold the child most conveniently and at the same time most securely and then you must not hesitate, but you must know at once what to do.

Now one word about the giving of an enema. This simple everyday procedure is done so often wrongly by nurses that I shall better describe it.

For this you should use a soft rubber catheter, not the hard rubber tip of the ordinary fountain syringe, and a funnel, best of glass, connected with it.

Place the child upon a blanket on a table or on a hard bed. It should be lying upon its back, or on its left side, with the legs slightly flexed in the groins and knees. Now fill your funnel with the liquid to be used let the catheter fill up then squeeze it together, dip the end of it into warm oil or vaseline and slowly as well as gently insert it into the anus, letting the liquid run a little as you get into the lower part of the rectum. The catheter will then be floated past the lower and middle sphincter muscle without having to employ any force. (Fig. 55).

The pressure of the liquid should not be more than six inches in babies and twelve inches in older children; that means that the funnel should not be held higher than this distance above the child's anus. Only if you observe this rule will you be successful and at the same time not hurt your patient.

I have often seen nurses climb on a chair to hang a fountain bag up on the wall or have somebody hold it way above his head. This is wrong and will hurt the patient because the pressure of the liquid will be directed

against the middle sphincter muscle, this will contract and thus close the upper bowel against the enema, which will then have to remain in the lower part of the



Fig. 55.—Enema.

bowel and balloon this up. This will not only counteract the purpose of the enema but it will also make the child very uncomfortable and cause it pain. I also believe that the method just mentioned is the only one by which you can administer a so-called "high enema."

Quiz

- Why should you look a newborn over?
For what should you look when inspecting the newborn?
How should the skin of a baby look?
Can you learn anything from the baby's cry?
Do premature babies cry loudly?
How should you take a baby's temperature?
Can you learn anything from a baby's cough?
Can you learn anything from a baby's respirations?
How may you count a baby's pulse?
What differences may you observe in the fontanel?
What should you observe in a baby's stools?
What should you observe on a baby's abdomen?
Why should you watch a baby nursing?
How should you prepare for the physician's arrival?
How can you get a sample of a baby's urine?
How should you hold a baby for the examination of its chest?
How should you hold a baby for the examination of its ears?
How would you hold a baby for lumbar puncture?
What is lumbar puncture?
Should you tell a child that it is not going to be hurt?
What is gavage?
How is gavage done?
How should you hold a child for intubation?
How should you give an enema?

CHAPTER VIII

THE INFECTIOUS AND CONTAGIOUS DISEASES

By the term "infectious disease" we indicate that a pathologic change of the vital functions of the body is caused by the action of one or more kinds of parasitic organisms which have invaded the body of the patient.

These parasites may belong to the vegetable kingdom, the so-called bacteria, or to the animal kingdom, the so-called protozoa; of some of them we are, however, not quite sure as yet how we should classify them.

Again while we know which parasites cause certain of these diseases, such as diphtheria, syphilis and malaria for instance, of others we are still in ignorance of the specific organism which is the cause of the disease, though we are certain that it is caused by an infection, as, for instance, measles.

If one of these diseases should be transmitted through indirect means, such as articles of food, etc., we speak of it as an infectious disease; if on the other hand it should be transmitted directly from one person to another we call it contagious. In the latter case it is, however, by no means necessary that the person who is thus transmitting the disease should be sick himself, it is sufficient that he harbors the germs somewhere in his system. A typical example of an infectious disease is typhoid fever, which we know to be transmitted either directly or indirectly through water; of the contagious diseases a typical example is diphtheria.

You will readily understand that a disease which is usually of an infectious nature may at times be trans-

mitted by contagion and also that a contagious disease may be carried indirectly and thus be transmitted by infection.

To illustrate this latter point I may state that I have repeatedly seen mothers who were taking care of one of their children when it was ill from typhoid fever acquire the disease by close contact; and I have also been able to trace two epidemics, one of diphtheria and another of scarlet fever, to milk.

In the following pages I shall refer to these diseases collectively as infectious diseases, because I trust that I have made it sufficiently clear to you that they must be one and all infectious and that only some of them are at the same time contagious.

When the body of a human being is invaded by one of these parasites one of three conditions must arise. Either the body is able to make them innocuous before they have had time to attack the system; or the parasite attacks the system, thereby making the person ill, but the latter is able in time to overcome the former and the patient recovers; or, finally, the parasites are too strong for the patient who succumbs to his illness after a longer or shorter time.

You will see from this that an infectious disease represents a fight to the finish between the parasite and its host. The factors which determine the outcome of this fight are: the pathologic action of the parasites and the more or less developed power of the body to overcome the parasitic disturbance.

We are also able to notice a difference at certain times in the same kind of parasites. At one time they may be entirely innocuous to the human being, while at another they will be extremely dangerous for it; in this case we

speak of them as "virulent," in the former as "avirulent."

Some of these parasites fortunately possess only a very slight virulence for the human race.

This faculty of resisting the attack of certain parasites is called immunity. It may be born in the body, or it may be acquired by overcoming the disease caused by them. It is for this latter reason that some of these diseases attack the human body only once in a lifetime.

Other parasites again leave the body in such a condition, though in good health, that it will be an easy prey to a subsequent attack of the same parasite; as examples for these diseases I may mention pneumonia, erysipelas and polyarthritis, commonly called inflammatory rheumatism.

Age and sex will frequently determine if and how the body can overcome a parasitic attack, and so will the fact if the individual has been suffering from another illness, or is still suffering from it, also what organs are mostly affected by the parasites, or what poison they produce.

Let us now investigate the question which will interest us most here, whether children owing to their youth show a special disposition towards infectious diseases, and, if so, why.

We shall find that the young body, on account of its immaturity, is much less adapted for a fight against parasites than the adult; and experimental work in special laboratories teaches us that it is much more difficult to immunize, that is to make nonsusceptible, very young animals than older ones, because the former can produce the antibodies, the antidote to the poison prepared by the parasite, in much less amounts and that to do this is a much greater strain upon their system.

We must therefore state most emphatically that childhood, as such, forms a special disposition toward parasitic diseases.

Some of these parasites produce in children and especially in infants, diseases of a severity such as we shall rarely observe in adults.

Furthermore, the least diminution in the natural resistance of the body of the child, be it from faulty feeding, or from climatic changes, will aid the parasites and will cause an infectious disease of much greater severity than we would observe in the adult.

Aside from this the young infant brings into the world a certain amount of immunity against some of the infectious diseases, because its mother has had them before conception, and she was thus in a position to transmit some of the immune bodies from her own blood to that of the fetus. The breast baby receives a further amount of these antibodies in the mother's milk and it will thereby be still more fortified against the invasion by parasites. Later in life these antibodies acquired in this way by the baby will be an aid in overcoming some of these diseases, as for instance measles which is rightly considered a disease of little danger, though the accidental infection with other germs during its course will influence this.

The fact that children are so very susceptible to many of these infections will account for their having these diseases during childhood as a rule and we call some of these, as for instance measles, chicken pox and whooping cough, "diseases of childhood" because almost everybody will have had them in youth and will therefore be immune against them later in life.

Let, however, one of these diseases, as for instance measles, be brought amongst a population where it had

been unknown before and where for this reason nobody carries any of the antibodies for this disease in his blood, and the disease will no longer be confined to the young but it will spread amongst the whole population and it will be correspondingly severe.

Sometimes we are able to immunize a large proportion of a population artificially against one of these diseases, so that it will become quite rare and that for this reason children are no longer exposed to it, and this disease will then be no longer figured among the diseases of childhood, as was smallpox, for instance, only a little over one hundred years ago.

Some of these diseases appear continuously here and there in single cases when we call their occurrence "sporadic."

They are also with us all the time, and are liable to appear grouped together in a community at a certain time, and we then speak of it as "endemic."

Let this same disease spread from one of these centers over large areas and we will call it "epidemic."

If a disease should circle the globe, as did epidemic influenza in the last two decades of the last century, then we shall speak of a "pandemic" disease.

Some of the sporadic diseases, as for instance measles, scarlet fever, and diphtheria will appear in endemic and epidemic form every few years, because in the interval between this and the last epidemic not sufficient susceptible children were present in a community to permit of its wider spread.

Seasonal changes also seem to have considerable to do with the appearance of such diseases; some of them, as for instance diphtheria, are more prevalent in winter, while others appear to be more frequent at other seasons of the year.

Another factor which should not be overlooked, is the increased chance for infection given by the congregation of susceptible individuals in schools and similar institutions. We are often able to observe how an epidemic will almost disappear with the closing of the schools in summer to reappear with the beginning of school in the fall of the year.

Formerly we thought that climate, as such, had considerable to do with the spread of diseases, such as for instance malaria and yellow fever. Comparatively recent advances in sanitary science have taught us, however, that these diseases are transmitted by insects, certain species of mosquitoes, and they have thus been proved to be confined to the region where these insects flourish the most.

Quite a number of the infectious diseases are preventable and therefore unnecessary; typical of these is typhoid fever which is due to a contamination of the water supply of a certain community or region, and which will disappear as if by magic with a change in the source of the water, or with its purification by artificial means.

Others again are preventable by sanitation, that is by following the laws of hygiene and by the isolation of everyone of the first cases appearing in a community.

Still others can be prevented by special measures such as vaccination against smallpox.

Let us now consider what happens in the body when these parasites enter it.

For some the portal of entry is known, and they may begin their work of destruction at the site of entry, for others we can only surmise it because they travel through the system to do their damage away from the site of infection, for still others we are as yet in ignorance as to their way of entering the body.

First of all let me warn you that in order to understand this rather complex idea of infection you must adhere to one fact, namely, that even where the parasite appears to remain localized to his portal of entry, where as we say only a local infection takes place, still the effect of this infection will be felt all through the body because the whole organism is called upon to resist this invasion.

Let us assume that some bacteria enter one of the hair-follicles in the skin and grow here. Do not think that all the body does is to throw a zone of leucocytes around this focus and that it can then retire upon its laurels. The whole body will be astir at once. The neighboring lymph-glands will throw out detachments of leucocytes, the so-called phagocytes, whose business it will be to attack the germs and to devour them if possible. The activity in these lymph-glands will be tremendously increased, they begin to swell. Should they be successful in their attack the invasion will be repelled, the germs will be destroyed, the fight is won, and the glands will return to their former size.

If the lymph-glands should fail in their work they will sacrifice their own lives in order to save the rest of the body, they will be changed into pus, a glandular abscess will be formed. We will then observe not only the local destruction at the site of the original infection, but we will also find some of the glands destroyed and the body saved.

What would our body be without these faithful guardians, the lymph-glands? The first invasion of bacteria in the body would mean general infection and death.

Nature, however, does not intend that the body should take any chances and that it should rely entirely upon the lymph-glands. As I have said before the whole

system is in alarm. The blood making apparatus is stimulated in furnishing still further leucocytes for the fight. The blood is furnished with bodies to bind and thus neutralize the poison prepared by the bacteria. This sets up a reaction in the whole system, which is further evidenced in the rise in temperature. This may not be sufficient in a slight infection to be measured, but in one of any magnitude it will be considerable and will then be a further means of defense for the body because the germs do not grow as well in a medium the temperature of which is above that of the normal body.

If this is what takes place in our body if a comparatively trivial infection should attack it, can you imagine what will happen when one of the infectious diseases should invade it and overrun the system with parasites?

As I have indicated above some of the parasites do not only damage the body by the havoc they work at the site of their entrance into the body, but even more to be dreaded is the systemic effect of the poison or poisons which they produce, and which the body at times finds it very hard to overcome.

For an example let me tell you the effect of the action of the bacteria causing diphtheria. The Klebs-Löffler bacillus usually makes its entrance into the body through the throat where it will cause an exudative inflammation which may be so severe as to interfere with respiration. But it also produces two kinds of poison, toxin. One of these which is always present in large quantities affects the blood vessels and the heart; the other has a specific action upon the nervous system and causes more or less localized paralysis in some parts of the body.

Still other bacteria like the tetanus bacillus, the germ causing lockjaw, do not cause any evident local injury

at their site of entrance but the poison it produces permeates the nervous system and it is thus responsible for the typical attacks.

A germ like the tubercle bacillus may cause destruction in all the tissues of the body wherever it is carried, while the parasite causes malaria attacks and destroys the red blood-corpuscles.

Of some of these infections we do not yet know their mode of action, nor can we fully understand as yet if the symptoms we observe in or upon the body are the effects of the action of the germs or if they may not rather be the answer of the body to the invasion. As an example for this I might mention the rash in scarlet fever.

In its fight against the poison prepared by the invaders the body of the host, the patient, produces an antidote which will neutralize this poison somewhat in the same manner as an alkali will neutralize an acid and thus combine with it to form an innocuous salt. If the body is strong enough to produce these so-called antibodies in sufficient quantities the life of the patient will be preserved, he will recover; if not, serious damage will be suffered by it and the patient will eventually die.

This fact, though suspected, and made use of empirically for some time, has only comparatively recently been brought upon a scientific basis so that it can be made use of not only in the treatment but also in the prevention of these diseases.

Take as a typical example the administration of antitoxin in diphtheria.

In the preparation of this antitoxin we make an animal, usually a young healthy horse, slightly ill, by

the injection of a small dose of living Klebs-Löffler bacilli.

During this illness the system of the animal defends itself against this invasion by producing the antidote, the so-called antitoxin, against this germ.

After the animal has recovered from this first injection, it will be able to stand a larger dose with impunity, because this antitoxin will be circulating in its blood ready to neutralize a certain amount of poison.

It is now injected in repeated increasing doses, always short of making it seriously ill, until finally its blood can neutralize many times a dose of poison fatal to an animal not so prepared.

Now the horse is bled; the blood serum, which contains the antibodies is drawn off and prepared for use.

Let us now assume that a susceptible child has been exposed to an infection with the diphtheria germs. These lodge in its throat and begin the work of producing their poison, the toxin.

If the physician can see this child early enough, that is before the bacteria have had time to make up too much toxin, he will be able by the injection of the antitoxin to do two things. First the antitoxin will make the toxin innocuous and second the injection will stimulate the body of the child in preparing an oversupply of antitoxin itself, so that it can take care of any further toxin which the germs should produce.

The parasites will find the body of this child an unsuitable medium to grow in; they will die and the child is saved.

But, this child has brothers and sisters who are also susceptible but who have not yet been exposed and the physician wants to make them insusceptible, that means he desires to place them into the position of persons who

have overcome the disease and who, for this reason, still carry enough antitoxin in their blood to neutralize the toxins should they be invaded by the germs.

He will proceed to give these children smaller, so-called immunizing, doses of the antitoxin. These are frequently sufficient to stimulate their systems to make up enough antitoxin themselves to be saved from an infection.

Quite recently another most interesting fact has been found, one by which we can tell if the body of a certain person contains enough antitoxin to make him immune should he be exposed to these germs.

We have learned that persons who have some antitoxin in their systems, be this by inheritance or by overcoming the disease, or lastly by artificial means, will react by the application of some of the toxin to a denuded small surface of skin in a peculiar manner; and that the strength of this reaction will also indicate the amount of antitoxin present in the body.

By this simple method we will be able to tell if a person is sufficiently protected against this disease, so that an exposure to these germs will be, in all probability, harmless, or if he should be immunized.

But, we have also learned from this another fact, namely that some people seem to be unable to produce any appreciable amount of antitoxin, and that they are the ones who will have this disease more than once.

Quite naturally if this should be a nurse she will better avoid as far as possible all chances of infection.

We possess, however, still another means of protecting the body against infection.

It has been found out by experiments on animals that the injection of dead germs causing some of these diseases will also stimulate the body to prepare larger

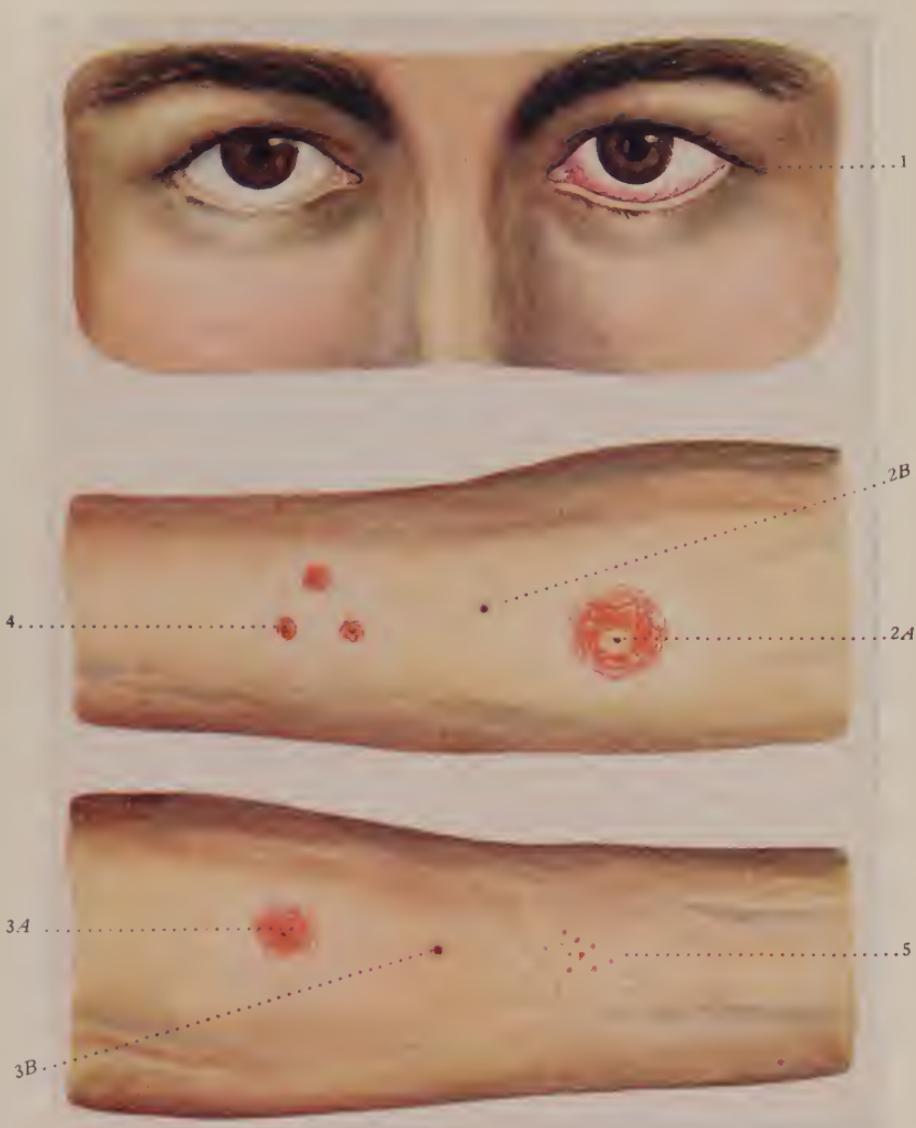


Fig. 56.—Tuberculin reactions. (Pottenger, *Tuberculin*).

1. Conjunctival reaction of left eye.
- 2A. Von Pirquet reaction, well marked; *B*, control site.
- 3A. Von Pirquet reaction, moderate; *B*, control site.
4. Moro reaction, well marked.
5. Moro reaction, slight.

amounts of antitoxin, even after it has been invaded by these same germs, and thus protect the person against their ravages.

Of this principle we make use in the injection of the so-called vaccines, that is of liquids containing known numbers, usually so many millions, of the dead bodies of these particular germs.

After the body has been invaded by a certain germ, when the person is, therefore, suffering from this disease caused by it, we have in many cases the means at our disposal to ascertain this fact and thus to make a diagnosis of the illness when it was otherwise doubtful.

We may then either take a drop of the blood of the patient, which will contain, quite naturally some amount of antibodies and add this to some of the living germs which we suspect. If the patient is really suffering from this disease the antitoxin in the blood will numb and paralyze the germs and they will clump together inertly, this is the so-called agglutination test as exemplified by the so-called Widal test for typhoid.

Or, we take some of the crushed bodies of a germ containing the toxin produced by it and administer it upon the skin, Moro's reaction (Fig. 56-4 and 5), or mucous membranes, Calmette's reaction (Fig. 56-1), or into the skin, von Pirquet's reaction (Fig. 56-2 A and 3 A) and the body of the patient will react in a typical manner to this, provided it harbors these germs. This is frequently made use of in cases of suspected tuberculosis.

In this disease we are also able to produce a general systemic reaction by the injection of minute doses of the same material, and we are then in a position to tell by the measures of defense set up by the body if that person is suffering from the disease.

I trust that after these general remarks about infec-

tion you will be able to understand the different diseases due to this cause of which I shall speak now.

I shall first take up the acute infectious diseases, especially the so-called diseases of childhood and then the chronic infections.

Perhaps the most frequent contagious diseases of childhood are the exanthemata, so called because a rash, an exanthema, is the most prominent symptom of the infection. These are measles, scarlet fever, rubeola and chicken pox, formerly we would have classed with these also smallpox.

Before I give you a short description of these diseases it will be necessary for me to familiarize you with certain technical terms which we usually apply in connection with them.

Incubation is the time which elapses between the taking into the system the specific germ until the first symptoms of illness appear. This time of incubation is peculiar to each one of these infections and varies considerably as we shall see.

Prodromal stage is the period from the first symptoms of the disease to the appearance of the rash.

Stage of efflorescence is the time from the appearance of the rash until this fades.

Desquamation means the scaling of the skin which is observed after some of these diseases.

Measles (*morbilli*, Latin), is caused by a germ which is still unknown. Its incubation is about eleven days. The prodromal or so-called catarrhal stage lasts three or four days and consists in the gradual onset of coryza, a peculiar, dry, metallic cough and conjunctivitis. About twenty-four hours before the stage of eruption we will be able to see the so-called Koplik's spots on the inside of the cheeks. The eruption appears first on the face

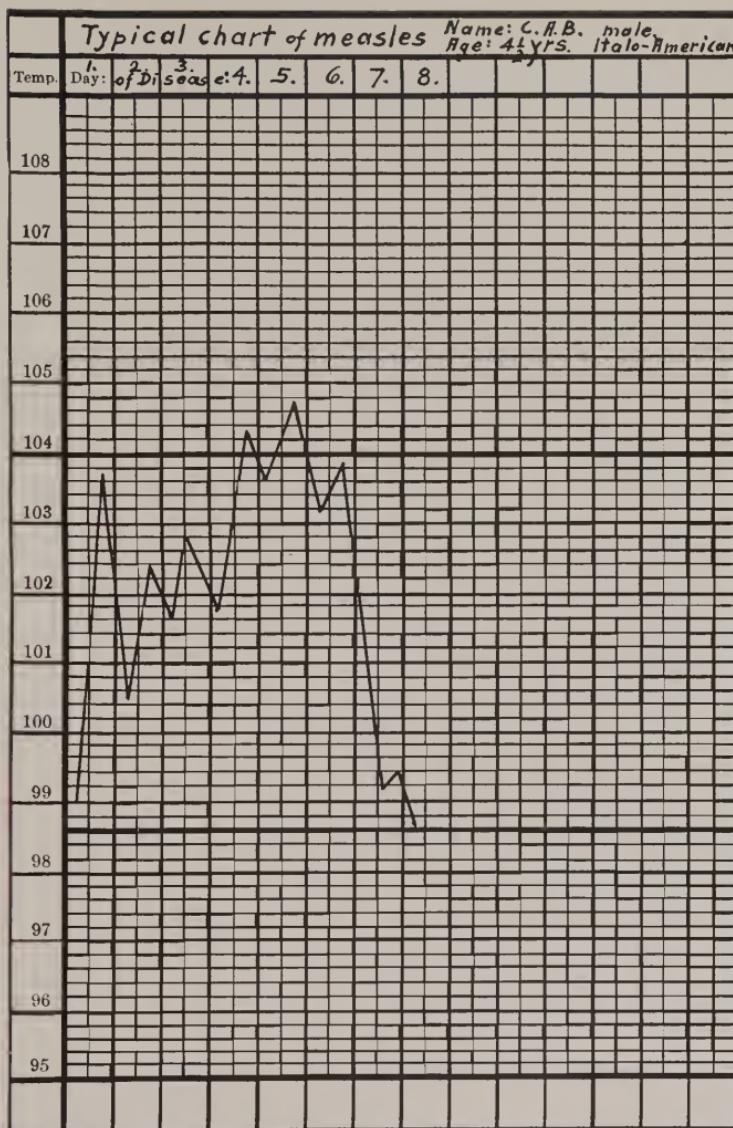


Fig. 57.—Temperature chart in measles.

and spreads to the whole body; it consists at first in isolated red papules which coalesce with intervals of healthy skin giving a blotchy appearance; the rash looks as if it had been put on the skin with a calcimining brush. The fever corresponds to the rash, they both last about six days when the rash will disappear and the temperature come down by crisis. (Fig 57.) Then a fine desquamation will take place, the scales looking like bran.

Two symptoms which may trouble the child considerably at times are the photophobia, the fear of bright light, and the dry harsh cough.

Measles is as a rule not a dangerous disease, especially not in a well regulated household, but in the crowded tenements and in the slums it demands many a victim.

During the stage of convalescence, after the acute symptoms of the disease have disappeared, you should be very careful with these little patients, because they are very susceptible to the accidental infection with the germs of the grippy infections and in my opinion the broncho-pneumonia which we observe so frequently in neglected cases mostly, is not part of the measles but is due to this secondary infection.

The poison of measles is also liable to activate any tubercle bacteria which are lying dormant in the system and we will quite frequently hear that a child developed tuberculosis in some form or other after this disease.

Infection of the middle-ear is by no means rare in measles, the germs being carried from the nose through the Eustachian tube, but this also is, in my opinion not a part of the original disease but a secondary infection.

The kidneys should be carefully watched because we see occasionally that the poison will damage these important organs.

Scarlet Fever (*scarlatina*, Latin), is also caused by a parasite which has not yet been found with any certainty. The stage of incubation is short, usually from two to four days. The prodromata last about twenty-four hours; they come on suddenly, are intense, and most prominently consist in vomiting and sore throat; in some children we often observe convulsions.

The eruption appears first on the chest, spreading to the rest of the body. The face shows it with the least intensity. The rash consists in minute specks forming into a uniform erythema, it looks as if it had been painted upon the skin with a fine camel's-hair brush.

In the throat we find intense hyperemia and also the typical rash, this also gives the tongue its peculiar appearance.

The fever which is high even in uncomplicated cases comes down by lysis and the temperature may be normal again in about nine or ten days. (Fig. 58.)

Desquamation is in large flakes and sheets, in which we can see the openings of the hair-follicles as pin holes.

Scarlet fever is the one infectious disease which I dread more than any other. It is a disease of surprises, and not only is the original infection frequently an extremely dangerous one but the many complications which are liable to arise add greatly to this danger.

Most to be feared is the infection in the throat and here it is often difficult to tell how much of this is due to the scarlatina and how much to the accidental septic infection.

From these affections of the throat we have in only too many cases, an infection of one or both ears; this middle-ear disease may leave the child partially or totally deaf and children under seven-years of age will then

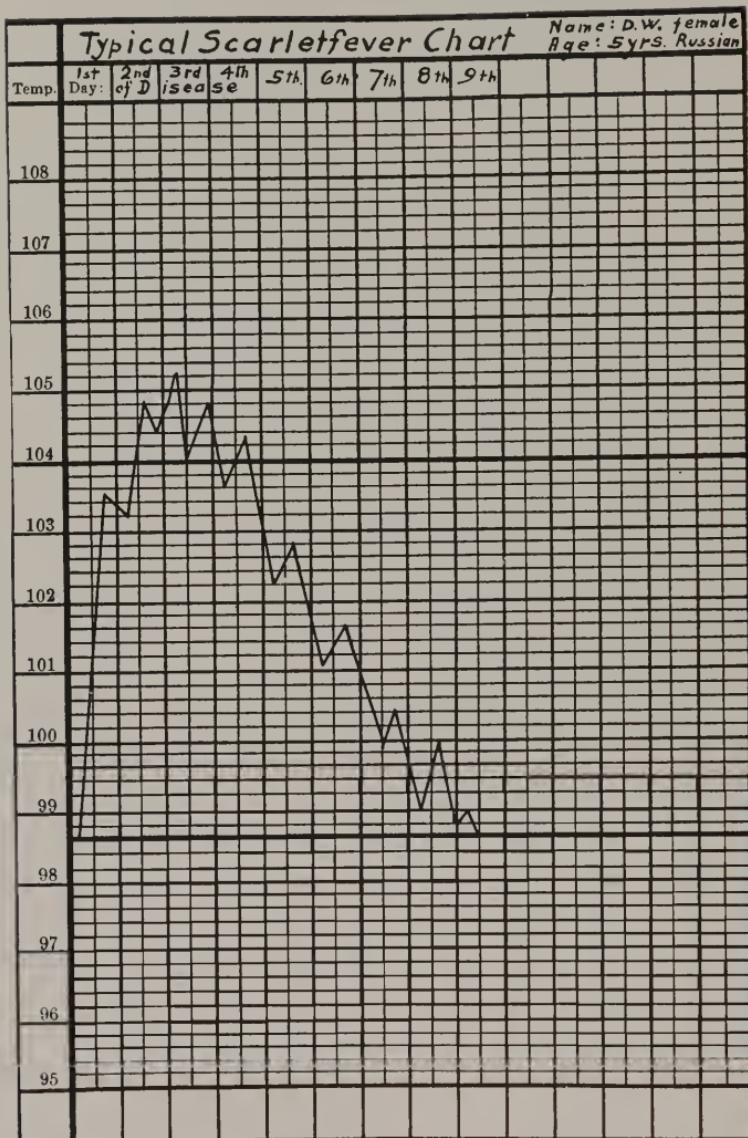


Fig. 58.—Temperature chart in scarlet fever.

also most likely be mutes because the faculty of speech is not yet sufficiently fixed in their brains.

After the child has apparently recovered from the attack of the disease we observe in many cases that the poison has weakened the kidneys and has left them in a damaged condition. This is why the careful physician will insist on keeping the patient in bed for four weeks, and why he will require you to watch the amount of urine passed and to supply him daily with samples of this.

Numerous other complications may be observed.

I want to warn you not to be misled by an erroneous popular opinion which still makes of searlatina, which is really nothing but a mild case of scarlet fever, a separate disease. This may lead to carelessness and many cases of the most severe type may be traced to one of these light ones.

German Measles (*rubeola*, Latin) is another one of the exanthemata of which we do not know the cause. It is comparatively a very mild disease and only a small number of children are susceptible to this infection.

The incubation is long, seventeen to twenty-one days.

The prodromal stage, if any, may last twenty-four hours and offers nothing characteristic.

The rash appears first on the face and spreads to the rest of the body; it consists in slightly raised spots which do not run together; sometimes the rash will more approach in appearance that of searlatina; at other times that of measles, it comes on in several successive crops.

Scaling is frequently absent, but when present it is slight. Complications are not to be feared.

Chicken Pox (*varicella*, Latin), we have not yet succeeded in finding the germ causing this disease.

Incubation is long, from two to three weeks.

The prodromata are slight and do not last more than twenty-four hours, they consist in a slight feeling of illness.

The rash comes in successive crops all over the body so that one can observe the different stages of it within a small area of skin. First comes a small red swelling of the skin which will develop into a blister within a few hours. This blister will remain for about two days, then a crust will form which falls off without leaving any scar.

Whenever the child scratches itself it is liable to infect one or more of these blisters and they will then leave permanent pitted scars on the skin. It is the rule to find at least one of these scars on the face of every person who had varicella in childhood.

Though chicken pox is a mild disease as a rule it may attack the kidneys. In weakly infants and in those who are suffering from a severe digestive disturbance the eruption may become gangrenous, and this is a most fatal complication.

Smallpox (*variola*, Latin). As I have told you before this used to be counted among the diseases of childhood and it was so prevalent everywhere that it was regarded as a special sign of beauty if somebody's face was not disfigured by the pitted scars.

The English physician Edward Jenner, a name you should never forget as that of one of the greatest benefactors to humanity, had observed that people who had been milking cows which were suffering from so-called cowpox and who had thus acquired this infection were immune to smallpox. In the year 1798 he published these observations which attracted widespread attention. Other physicians have verified this observation and

since then vaccination, that is, the inoculation with cow-pox has been practiced more or less in all the civilized countries and thousands, yea millions of lives have thus been saved.

Strange to say there were, from the very beginning and are still, some queer people who doubt the efficacy of vaccination, in the same way as these or similarly misguided people try to block every advance made in the medical sciences. Would you believe that in this year of Grace, nineteen hundred and eighteen, numerous people can still be found who would rather save a few animals than hundreds of thousands of children? Who do not "believe" in germs, nor in antitoxin? That some of this same class object to having our soldiers vaccinated against typhoid fever and would rather see them die by the thousands than to give up their preconceived notions?

This is the class of people who still object to the protection of the population of this country by universal vaccination against smallpox. Our federal government has insisted for years that every immigrant has to be freshly vaccinated, and successfully at that, before he can be landed on our shores; but anyone who was born here has a right to carry the contagion as much as he wants to. Unfortunately these queer people usually find equally queer representatives in the different state legislatures who are willing to lend themselves to the blocking of scientific advance and to the curtailing of the powers of our sanitary officers.

I have long maintained that the only way we can stamp out smallpox in this country, is to vaccinate everybody who is willing; then to abolish all other preventative measures against this disease and to trust to it that all those who do not believe in prophylaxis get

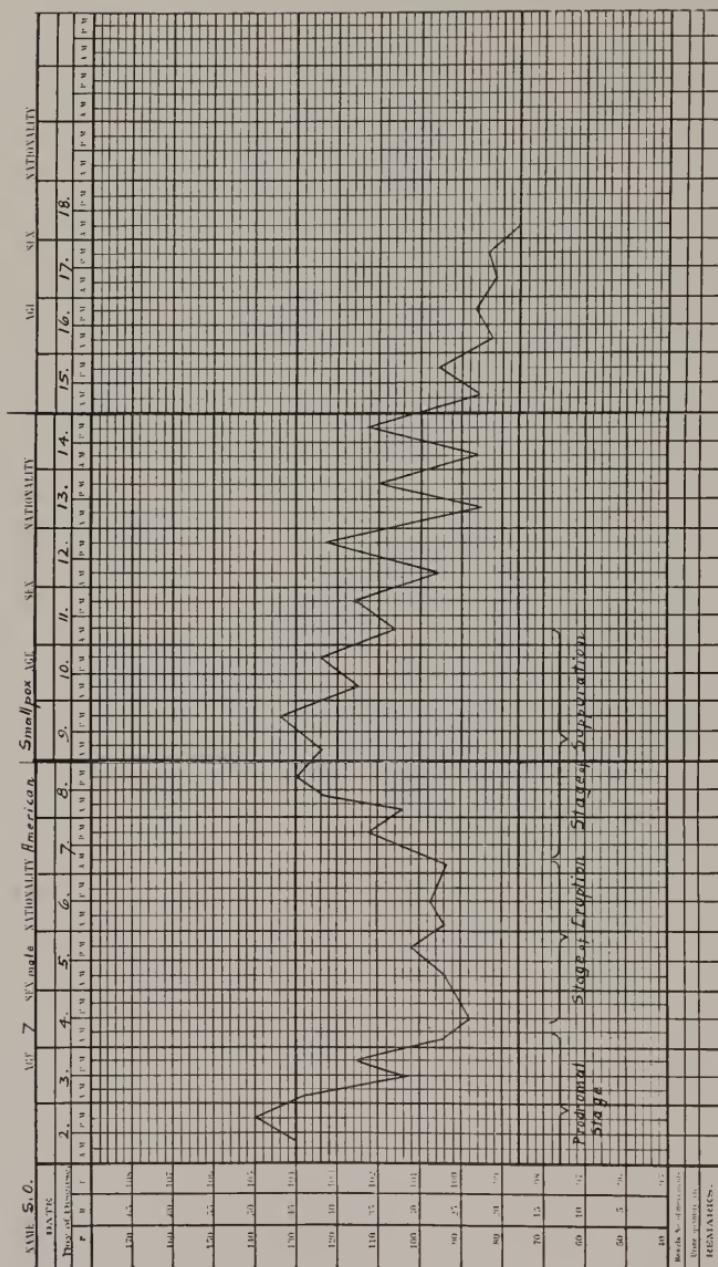


Fig. 59.—Temperature chart in smallpox.

the disease and be thus made immune, though against their wishes.

Let me tell you that I have been among smallpox cases for weeks and months at a time; but, as I had my family, my household and myself vaccinated at regular intervals of not more than seven years I have never felt even the slightest fear, not for myself but for those nearest and dearest to me.

I have been teaching now for more than twenty years that every nurse should keep herself protected by vaccination, because she can never tell when a case to which she is called before the diagnosis could be made may turn out to be smallpox.

True when a nurse finds herself exposed to smallpox she may still be immunized, because the incubation of the disease is about two weeks, that of vaccination only five days. But you will, I trust, believe with me that forearmed is better than forewarned. You must always be ready to take care of any kind of case, whatsoever its nature, then, and then only are you nurses in the best sense of the word.

Smallpox has a prodromal stage of four days. The onset of these symptoms is sudden and severe and most prominent amongst these is a very severe backache. The fever is high from the beginning.

The rash appears usually first on the forehead and wrists and then spreads all over the body. First we will notice hard nodules in the skin; in two days these will become vesicles and the fever will now be down. After another four days the temperature will rise again when the vesicles are changed to pustules; this is the so-called fever of suppuration, which is not due to an accidental infection but is part of the typical picture of the disease. Then the pustules will form crusts, the temperature

comes down near normal about the twelfth day of the illness; and when the crusts begin to fall off about the middle of the third week the pitted scars in the skin will be left which may disfigure the patient for life. (Fig. 59).

The complications of this disease are many and varied as the whole body is seriously affected.

Let us now look at the other infectious diseases of childhood.

Diphtheria.—This is an acute contagious disease which is also typically toxic. It is caused by the Klebs-Löffler bacillus which, as I have explained before, produces an exudation at its point of entrance into the body and which also damages the whole system through its toxins.

The stage of incubation is usually of from two to four days' duration.

Prodromata are not observed. Usually the child is suddenly taken violently ill, vomits and has severe headache; it is also, right from the beginning of the illness, quite weak and exhausted.

If the physician makes it a practice to look into the throat of every child that is ill, he will frequently be able to see on the very first day a small exudate upon one of the tonsils, which are the most frequent portal of entry of the germ. Complaints of sore throat on the part of the child do not come till the second day and other symptoms, such as hoarseness and swelling of the glands in the neck, still later.

In babies the disease often appears first in the nose, and may remain confined to this. Other parts of the body may, however, also be the point of attack and in one of the institutions abroad with which I had the pleasure to be connected, I had, at one and the same time, in adjoining beds one case of diphtheria of the

conjunctiva, another of the gums, a third of the navel and lastly one of the vulva.

Before the days of antitoxin the disease presented an entirely different picture from what we see now.

Except in neglected cases in which the diagnosis is made late, often too late, we see comparatively rarely now those never-to-be-forgotten sights of suffering children whose breath is labored so that the whistling inspiration can be heard across the room; the face blue and bloated, the head drawn back into the pillow, the elbows stemmed into the bed; in short a child fighting for its dear life and for the much needed oxygen.

With all this the temperature remains comparatively low, the fever rarely rises above 103° F. The child is apathetic, it has no appetite, it is pale and wasted.

In these untreated cases the process will usually progress until on about the sixth day the whole throat is lined with the exudate, then amelioration will set in, provided the child can overcome the disease, and about the twelfth day the temperature will be back to normal and the throat practically free. (Figs. 60 and 61.)

But even now the patient has to be guarded very carefully, his heart and kidneys are almost always considerably damaged by the poison produced by the bacillus and a sudden exertion or excitement may bring on heart-failure and death.

I remember particularly one case in a child of two years, his mother was looking after it and though I had by the use of antitoxin found the symptoms to have disappeared on the third day of the disease, I warned the mother against letting him sit up. She laughed and guessed she knew what was good for the child. On my next visit I found him sitting in his chair playing. I warned her again and still more emphatically. Two

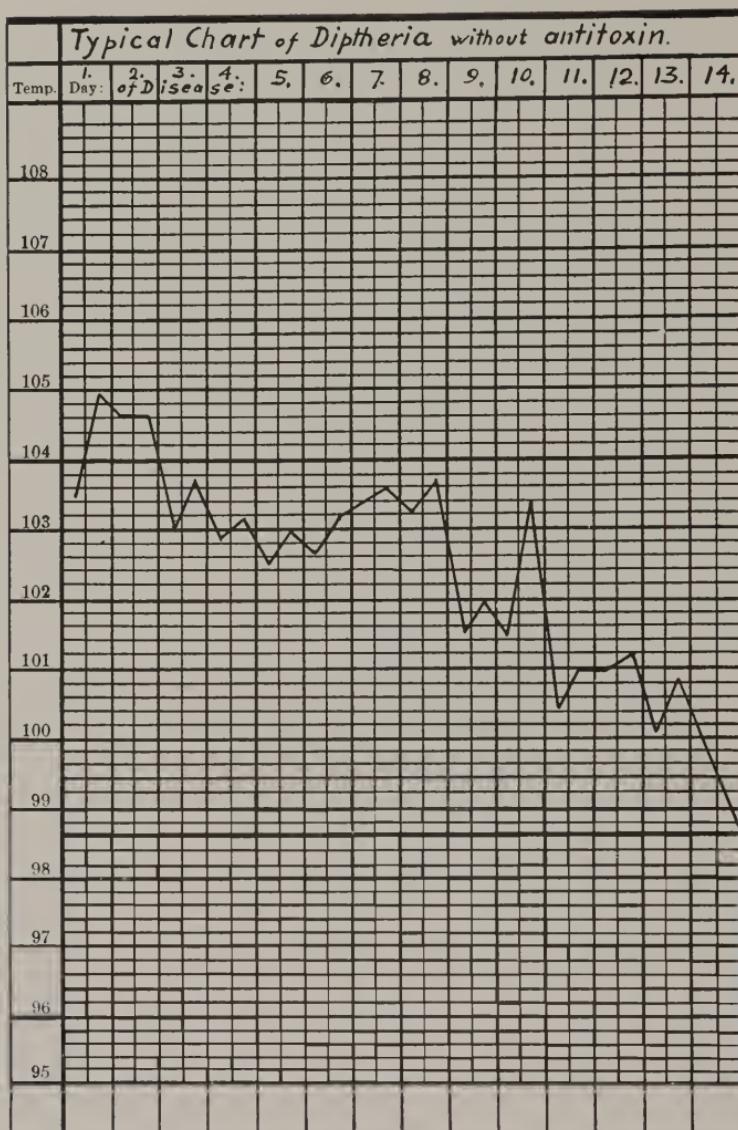


Fig. 60.—Temperature chart in diphtheria without antitoxin.

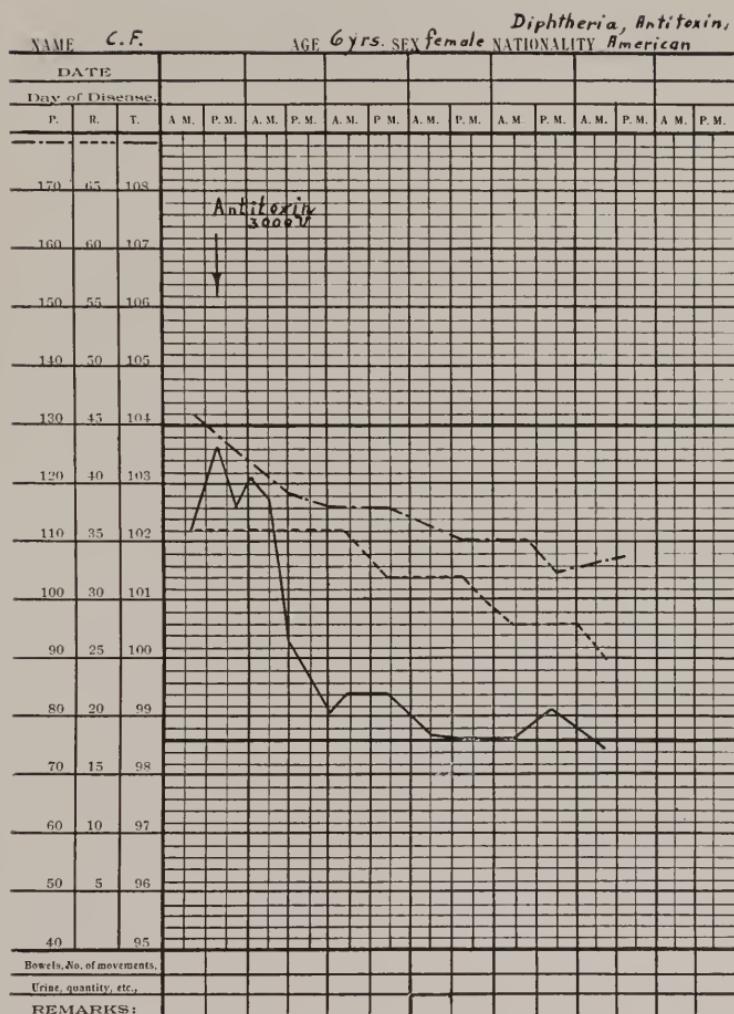


Fig. 61.—Temperature chart in diphtheria with antitoxin.

hours later I was called on the telephone to come at once. When I arrived the child was dead.

Do not, therefore, allow yourself to be misled by the truly remarkable result of the administration of anti-

toxin. Though all outward symptoms may have disappeared in twenty-four hours or so you must remember that the poison affects the whole body.

Whooping Cough (*pertussis*, Latin), is a peculiar disease. It is very common and in cities only few children escape it. Its cause has been recently found to be the so-called Bordet-Gengou bacillus.

It is spread mostly through attendance at school, and endemics of it are frequently observed in orphanages. Summer resorts at the seaside and in the mountains are also places where children are likely to be infected, because people are inconsiderate enough to take these little patients to such places thinking of their own comfort and convenience without giving thought to others.

The stage of incubation lasts usually about one week. If an exposed child should not show any symptoms after two weeks we have a right to assume that it escaped the infection.

For the sake of convenience we have divided the disease into three stages: the catarrhal, the spasmodic and that of recession. You must remember, however, that clinically you can not separate these stages distinctly.

The catarrhal stage shows nothing more than indefinite symptoms with coryza and a bronchial cough which at times may be croupy in character and is severer at night. This is a time when it will be quite difficult for the physician to make a diagnosis, except in time of an epidemic or endemic, or when other children in the same house or school suffer from whooping cough. The physical examination of the child will not give him any indication; the fever is irregular and slight.

When finally the nurse or the experienced mother hears the first typical attack, which is usually after two weeks, the diagnosis can readily be made.

It seems to me to be superfluous to describe to you one of these attacks, once you have seen and heard one, you will never forget it.

The spasmodic stage usually lasts from four to six weeks, though it may last much longer. The severity of

Whooping Cough. N^o of attacks & vomiting

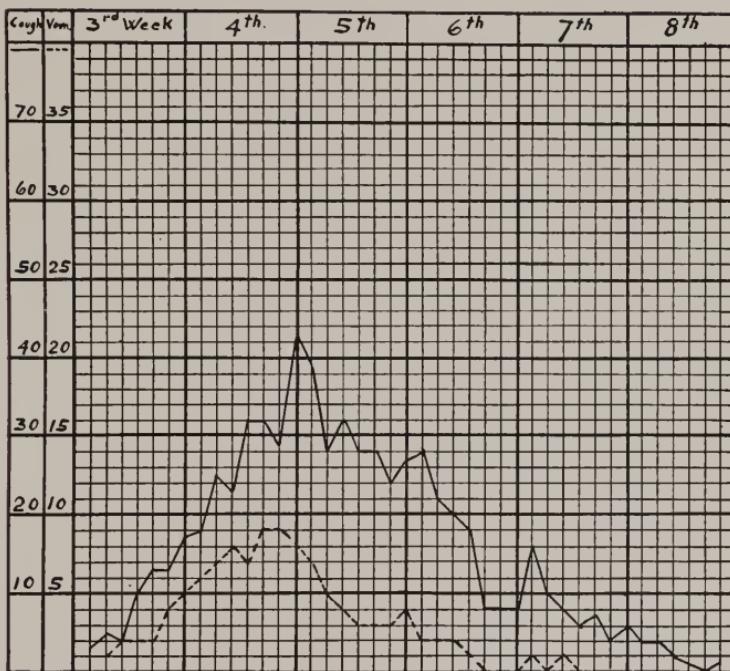


Fig. 62.—Chart of whoops and vomiting.

the disease is determined by the original condition of the little patient, the number of attacks in twenty-four hours and the amount of vomiting with these, and you should keep a chart of this. (Fig. 62.) As a rule there will be no fever.

Finally the attacks will become less and less, until all

that is left is a loose cough which may sometimes last for quite a considerable time and may return the following winter.

Whooping cough, the same as measles, is a disease in which the social circumstances of the family of the patient determine the outcome to a great extent. In the sanitary dwellings of the better classes it is hardly to be feared, but in the slums and in orphanages it is quite frequently fatal. This is not due to any greater severity of the infection under these poor conditions, but it is due to accidental infection with the germs causing the so-called "colds"; which will then in many cases lead to the justly dreaded bronchopneumonia. Also you will remember that in this disease as well as in measles any dormant tubercle bacilli in the body will be stimulated to renewed growth and this explains the frequency with which tubercular infection seems to follow upon whooping cough.

Mumps, or Epidemic Parotitis.—This is a contagious disease the cause of which is not known.

The period of incubation is long, two or three weeks, then comes a stage of prodromata which offers nothing more than a slight feeling of illness and then comes the characteristic swelling of the parotid glands, usually first on one side and a few days later on the other. This is accompanied by slight fever, a feeling of tenseness over the swollen regions and difficulty in mastication.

After increasing for two or three days the swelling begins to soften and then disappears in a few more days.

As a rule the child does not feel ill enough to stay in bed and will be well soon.

Epidemic Cerebrospinal Meningitis.—This disease which is caused by the meningococcus intracellularis of Weichselbaum is not transmitted by contagion from pa-

tients suffering from it as much as from carriers who do themselves suffer only from a slight pharyngitis.

The disease appears usually in epidemic form during the colder months, reaching its height during the months from February to May, and it is rather rare in summer.

It is a typical disease of childhood, 90 per cent of all the cases are observed in children, and of these 25 per cent will be infants. The cases which are observed amongst adults occur as a rule in barracks, camps and prisons.

The disease begins usually suddenly with vomiting, high fever, severe headache; this will soon be followed by convulsions. (Fig. 63.)

The most characteristic symptom is the stiffness and retraction of the neck.

The duration of the disease varies considerably from a few hours to about six weeks.

Only after convalescence has set in will we be able to tell if and how much damage has been done to the nervous system.

Fortunately we now possess a remedy for this dreadful disease in an antitoxin. But this is only serviceable in this specific type of infection and has to be used as early as possible and then intraspinally.

The slight operation, if we can dignify it by this name, of spinal puncture is still comparatively unknown among the laity. It is in this, as well as in some other diseases, of tremendous value both as a diagnostic and a therapeutic measure and the nurse can be of invaluable aid to the physician and she may at the same time be able to save the patient's life if she impress upon the family of the sick child the triviality of the procedure in comparison to its possible beneficial effect; the more so as even in fatal cases it can not do any harm, but on the

contrary, by relieving the pressure upon the nervous apparatus it will undoubtedly lessen the suffering.

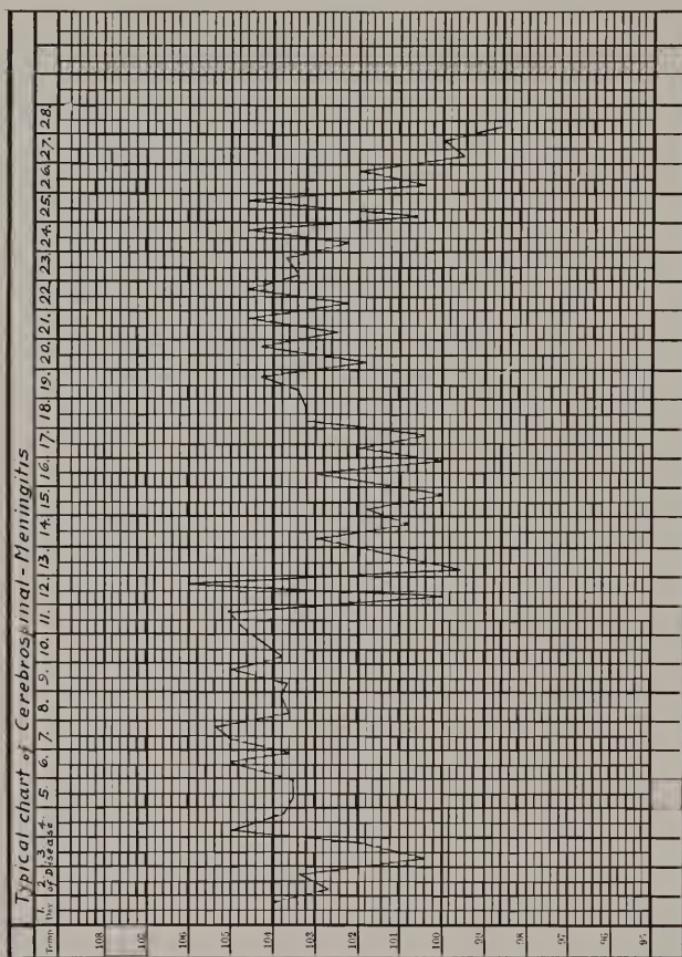


Fig. 63.—Temperature chart in epidemic meningitis.

Anterior Poliomyelitis, or Infantile Paralysis.—This disease which has been seen sporadically for a long time and which was first described by two physicians under

whose name it is also known as Heine-Medin's disease, has of late appeared in endemic and epidemic form in this and other countries. The germ causing it has been found in all probability, but not yet with absolute certainty.

The prodromal stage lasts usually three days. During these we observe sudden high fever, restlessness, sleepiness, headaches, pain in the limbs and, what I consider most characteristic, vomiting with constipation.

After the disappearance of these acute prodromal symptoms develop the typical paralyses which will increase in extent for one or two days, and will then frequently disappear to a greater or lesser extent in the course of days, weeks or months.

Most to be dreaded in this disease is the paralysis of the respiratory muscles which is usually fatal.

Recent investigations have shown that our efforts to overcome the paralysis which is left in about eighty per cent of these cases should begin about six weeks after the onset of the disease and that they should be continued for many months. This offers a wide and useful field for nurses who are willing to undergo the special training required for the analysis and treatment of these poor crippled children.

We have now finished the diseases peculiar to childhood. Before taking up the nursing and care of these we will have to consider some of the other infectious and contagious diseases which may be found frequently in children and which may then offer different problems from the same disease in the adult.

Epidemic Influenza.—Few of you will remember the pandemic of this disease which, coming from Asia in the year 1889, traveled across Europe, thence across the Atlantic Ocean to this country where it appeared first

in New York, later in Chicago, and then in other cities of our Eastern States. It then crossed this continent following always the lines of travel, and thence returned to its place of origin in 1891. By this mode of its spread it is proved to be a typical contagious disease which is communicated through persons ill or recovered from it. Since then only smaller epidemics have been observed.

The period of incubation is extremely short, from twelve hours to three days.

Its cause is the bacillus *influenzæ* of Pfeiffer, the portal of entry of which is the mucous membrane of the throat and nose, where it will frequently remain localized, though it will by no means rarely descend into the deeper respiratory passages.

If you had undergone one of the attacks of this great pandemia you would be sure to remember that, though the disease lasts as a rule only from one to three days, from the high fever, the intense pain in every muscle in the body, the distressing backache and splitting headache which accompany the coryza, the pharyngitis and conjunctivitis that it is a general infection. In children and especially in infants it leads very readily to an otitis media with suppuration and also to a retropharyngeal abscess, bronchitis and pneumonia.

The Grippy Infections.—While the infection in influenza, as we have seen, is due solely to the bacillus Pfeiffer, that in the so-called grippy infections, which are often confounded with influenza, may be due to a number of different germs. These grippy diseases, or as they are usually called "colds," are endemic and they represent not only the most frequent form of infection in our climate but they are also most frequently observed in childhood; some children seem to have a special predisposition toward this kind of infection.

The grippy infections are the most contagious of all diseases. They are spread by everyone who is suffering from what is still considered by too many people a simple cold and we can watch its spread through a family, a school, a hospital or through a whole community.

The mode of infection is very easy to understand when we remember that every time we open our mouth to talk we propel a cloud of droplets for some distance from our person every one of which will hold a number of these germs; when we cough or sneeze these droplets will be driven a good deal further.

Let me illustrate to you some of the ways by which this contagion is most frequently spread.

A mother takes her baby out for an airing and meets a friend who has just blown her nose because she has a "cold." Her gloves are contaminated with the germs and she immediately proceeds to pat the baby in the face. Or, which is still worse, she proceeds to hug the baby and most likely kisses it on the mouth. Do you wonder if this baby will have a coryza in two or three days?

You may yourself have a coryza while you are on duty in the baby's ward, or the attending physician, or interne, will be so afflicted, what more natural than that the close contact into which you and they come with the patients will infect some if not all of them?

A child goes to school and the teacher is coughing and sneezing; she will infect a large number of her pupils who will come home and in due time spread the disease all through the family.

I shall leave it to your own imagination to picture for yourself other modes of contagion, but I trust that this will suffice to put you on your guard and that it will teach you to be extremely careful when you carry this infection; that you should also protect your patients

at all times from the approach of visitors, even of members of their own family whom you suspect of this.

You yourself should keep away from the patients when you have even a slight "cold," and where this is not possible you should wear a gauze mask before your mouth and nose when around your duties. You may also remind the physician to do so, when needed and he will frequently thank you for your thoughtfulness.

In children's hospitals, orphanages and similar institutions every newly admitted case should be isolated for about two weeks. Should one of the inmates show the least sign of this infection he should be isolated by a gauze tent being placed over his bed or by screens arranged around it and the beds should never be nearer to each other than six feet. Still better is the most modern way by which wards are cut up into cubicles with glass partitions, so that you can supervise all the children at once and that they can see each other without being able to infect their neighbors. Where the expense of these glass partitions is prohibitive I have seen excellent results from gauze screens.

Let me also warn you against using your handkerchief on one of your little wards, and still more against the worst of all offenders, the family handkerchief.

Now we shall see what may happen when the contagion reaches a child.

The period of incubation is very short, from one to four days.

Then the child will have a dry swelling of the anterior part of the nose, which will last for about two days, the nose is stuffed so that the child can hardly breathe through it; in babies this may be entirely impossible. Two days later the nose begins to run, we observe a mucous discharge from the nostrils which will soon

become mucopurulent and the eyes are reddened and show an increased conjunctival secretion. The child has

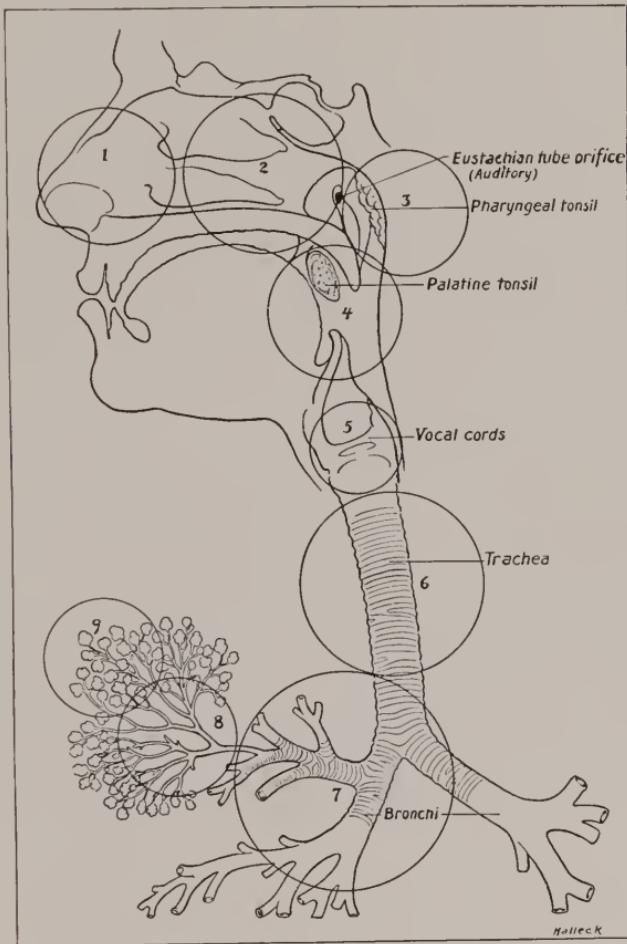


Fig. 64.—The grippy infections.

a "cold in the head," a coryza or anterior rhinitis. (Fig. 64, 1).

In some cases the disease will stop here, especially

when measures are taken at once to arrest its extension. Let me tell you right here that by the proper methods we are able in a good many cases to arrest a further spread of the germs in our patients by using energetic means of treatment at any of the stages which I shall now describe.

Let us, however, assume that the disease is permitted to follow its course, which only too often is the case, and we shall see how the infection creeps into the back part of the nasal cavity, we have a posterior rhinitis. (Fig. 64, 2.)

Look at the anatomy of the postnasal space and note the close proximity of the Eustachian tube and you will at once find the explanation of the frequent complications in the middle ear.

This posterior rhinitis is quite liable to become subacute or chronic.

The infection descends farther and the nasopharyngitis (Fig. 64, 3) which results makes the child hawk and cough, in its efforts to remove the tough secretion which we may now see behind the soft palate. Also, especially in babies the tissues under the mucous membrane in front of the cervical spine may become infected and produce a rectropharyngeal abscess.

In some cases the infection takes place through the mouth, it settles upon the soft palate and the tonsils, we have a pharyngitis. (Fig. 64, 4).

On the tonsils we will observe two forms of this invasion, which is also called angina. Either we observe stripes of exudate so-called lacunar tonsillitis, or the tonsils are studded with one or more purulent cores, so-called follicular tonsillitis. In severe infections the tissues back of or above the tonsil are attacked, an abscess forms, this is a quinzy.

From the pharynx and the nasopharynx the disease may go farther down into the larynx, a real sore throat, laryngitis (Fig. 64, 5) with its dry, irritating cough, and in some children pseudoeroup.

Next it will attack the windpipe, tracheitis (Fig. 64, 6). Do you remember the last severe cold you had, when you had that distressing cough and one morning you woke up and you felt tight, and a burning sensation behind the sternum at every inspiration and a pain there? Well, you then had a tracheitis.

Then the larger branches of the bronchial tree will be involved, this is a bronchitis. (Fig. 64, 7).

When the smaller bronchi are included in the infection we have to deal with a bronchiolitis. (Fig. 64, 8).

And finally the lung vesicles will be infected here and there at the ends of these bronchioli we now have the picture of that most dangerous condition found in babies and young children and also in those suffering from measles or whooping cough, a bronchopneumonia. (Fig. 64, 9).

In cases which go through all these stages usually two weeks will elapse from the original coryza until the bronchopneumonia. But let me tell you again that we are able in a considerable number of cases to prevent this progress and to arrest it at any one of the intermediate points.

Pneumonia.—Croupous pneumonia differs considerably from bronchopneumonia, in the former small lobules of the lungs are infected here and there in widely distributed areas, for this we call it also lobular, in the latter either part or all of one lobe is attacked, this is lobar pneumonia.

Lobar pneumonia is by no means as rare in babies as

we used to think, and in older children it is a very frequent disease.

It is caused by the pneumococcus, of which we now recognize four different types. We have also learned recently that the type of germ causing the infection determines to a large extent the outcome of the disease; some being more virulent than others.

In young children the beginning of the disease is not characteristic, they appear ill, have fever, vomiting and sometimes convulsions. In older children it starts often with a chill as in the adult.

Quite frequently it is a very difficult matter to find out the cause of this illness until the disease has reached the outer parts of the lung so that we can find the physical signs of it in our examination.

The inspection of the sputum is not of great help in younger children because they do not expectorate until they are about seven years old. We are, however, able to obtain this sputum by making a child cough and then catching it before the little patient has had time to swallow it; this is of great importance when we want to determine the type of the germ, as we have an efficient vaccine against at least one of these types.

In both forms of pneumonia the infection upon reaching the outer parts of the lung may attack the pleura and we will then have a pleurisy. This may be of the dry kind, which is very painful or we may have a transudate of serum, the so-called pleuritic exudate. Should this latter become infected, perhaps by some suppurative focus somewhere else in the body, thus as an otitis media, we will find pus in the chest, an empyema.

When the disease is in parts of the lung adjoining the diaphragm the child may complain of a severe abdominal pain as its most prominent symptom. This may make us

think of abdominal conditions, as for instance appendicitis, and it is liable to be very misleading.

Typhoid Fever.—This disease is caused by the bacillus of Eberth, which is transmitted by means of infected water, either directly or indirectly, thus as milk and other articles of diet which are liable to contamination and are consumed raw. It is also transmitted by persons who have recovered from the disease and who may harbor the germs for years, so-called carriers.

I have stated before that this infection is preventable and therefore a gauge of the hygienic as well as the sanitary standard of a community.

We used to think that it was rather rare in infancy and infrequent in childhood. We have learned, however, that this is not the case.

In babies the gastric symptoms may be so prominent that the fever will run its course as a so-called gastric fever; the older the child, the more will the type of the disease approach that of the adult.

The temperature in a case of typhoid is usually quite characteristic, the fever continues with more or less severity for three weeks. (Fig. 65.)

From the tenth day of the disease we are able to make a sure diagnosis from an examination of the blood, the so-called Widal reaction of which I have spoken before.

In this disease, perhaps more than in any other, the nurse must be on the lookout continuously, it is a disease of surprises. She must examine every stool for the least vestige of blood which may mean a hemorrhage into the bowel. This may also be indicated by a sudden drop in the temperature. (Fig. 66.) A rapid remission of the fever with severe pains in the abdomen and signs of collapse may be indicative of a perforation of the bowels.

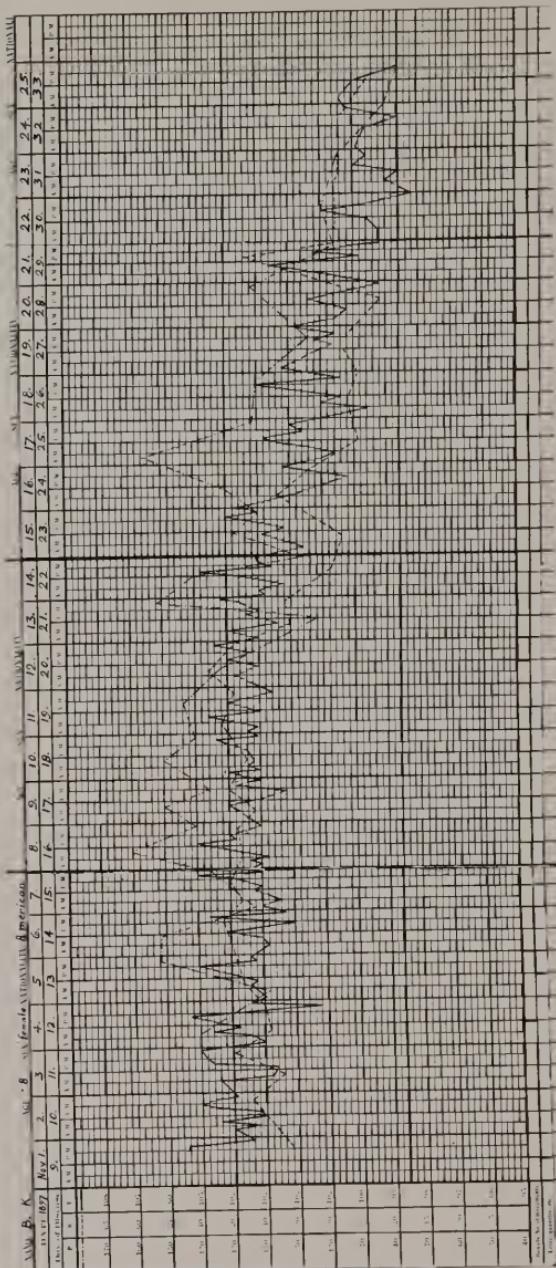


Fig. 65.—Temperature chart in typhoid fever.

For these and many other occurrences the nurse must be watching all the time, and when any one of these

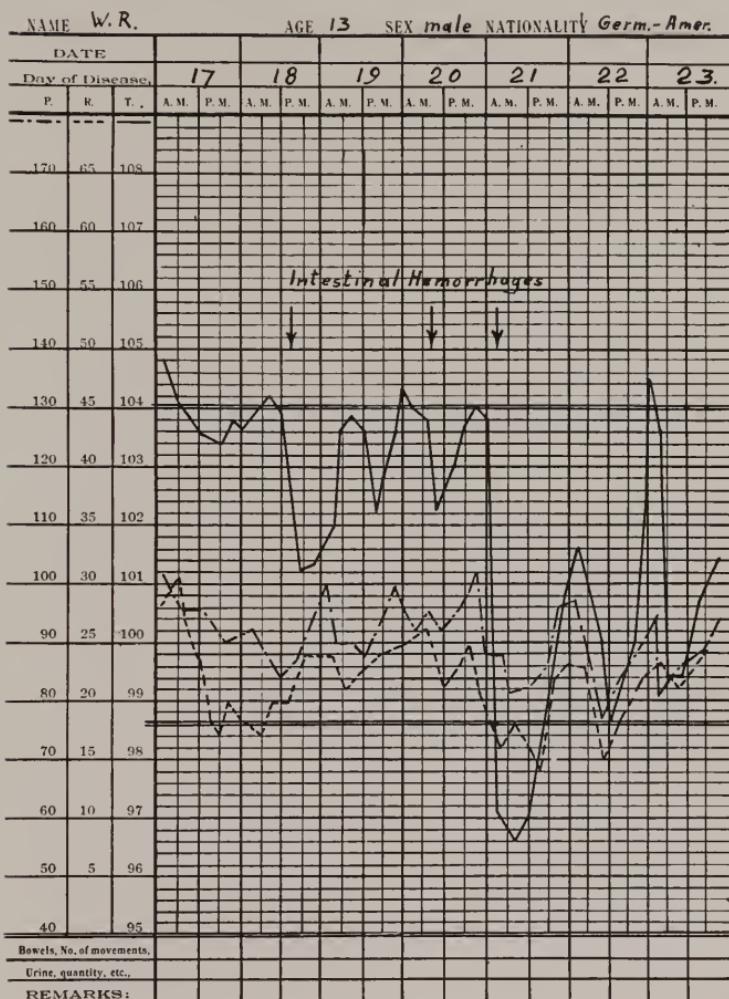


Fig. 66.—Hemorrhages in typhoid fever.

should arise she must send for the physician at once. Better by far that she call for him once too often than

that she should overlook a danger signal and thus jeopardize the patient's life.

Inasmuch as you can never tell when you will be called upon to take charge of a case of typhoid fever, you should keep yourself immune by the preventive inoculation which is at the most an inconvenience for a day or two, but which has proved itself to be a great boon to humanity. Look, for instance at the statistics of the morbidity and mortality from this disease in our huge army now and compare it with that of the comparatively few men in the Spanish-American war of 1898!

The Rheumatic Infections.—These infections which are due to a germ which has not yet been isolated appear in three forms: The so-called acute articular rheumatism, also called inflammatory rheumatism or polyarthritis (this is an inflammation of many joints); chorea minor or St. Vitus' dance; purpura rheumatica.

Polyarthritis is rather rare in the first period of childhood; it is also frequently overlooked at this age and the pains attributed to some trivial cause. We will hear that a child which is very ill has had "growing pains" for some time. The disease affects one joint after another, sometimes returning to the same one several times during its course. The child has high fever and suffers greatly from pain.

Chorea minor is a peculiar infection which is usually seen after the fourth year of life. It consists in grotesque purposeless movements of different parts of the body and it is at times so severe that we have to pad the bed to prevent the patient from injuring himself. In lighter cases these motions cease during sleep, in the severe ones they are incessant.

Purpura rheumatica is a hemorrhagic affection of the skin accompanied by high fever.

These three forms of the rheumatic infection may at times replace one another; the more so as one attack of this infection predisposes for others. They are not local but general diseases, and the most dreaded complication is the inflammation of inner lining of the heart, the endocarditis, which is observed in about seventy-five per cent of the cases and will usually damage the valves in the heart, leaving the patient handicapped for the rest of his life.

Sepsis.—The septic infections are caused by the omnipresent germs of the streptococcus and staphylococcus strains. With the knowledge we now possess of prophylaxis, of asepsis, and of antisepsis, we have been able to reduce the number of these unnecessary and preventable infections to a very large extent, but, we still do observe them far more frequently than we should.

The younger the child and the more it has been weakened, the more frequent will we observe these infections, and the more dangerous will we find them to be.

I have told you before that infants suffering from severe digestive disturbances, especially those who had been overfed with carbohydrates, show a great disposition towards these infections.

Though these may at first seem to be localized, mostly in the skin, the infection is a systemic one and its effects may be far-reaching.

Sepsis is also a frequent complication of other infectious diseases such as scarlatina and diphtheria, and they will then make the prognosis much more doubtful.

We now come to the chronic infections in childhood.

Syphilis.—This disease is also often called **lues** and I advise you to use this latter term when speaking to the physician of the disease before the family of the patient,

but not to them, because this name is not understood by the laity.

Syphilis is caused by a parasite, the Spirochæta pallida. In children we usually find it as a congenital hereditary disease; though the acquired may also be observed, for instance when it has been transmitted through the wet-nurse.

The most frequent early symptoms of congenital lues are eruptions of all kinds upon the skin and a persistent coryza during the first weeks of life which is accompanied by a loud sawing noise at inspiration.

Sometimes the early symptoms may be so slight as to be overlooked and then the disease will appear later in childhood; then especially as an affection of the eyes, deformities of the permanent upper middle incisors and deafness.

The most important thing for these poor children with congenital syphilis is that they should receive persistent and long-continued treatment.

You should always be on the lookout for this disease and you should call the attention of the physician to any suspicious symptom, both for the sake of your patient who may be saved considerable suffering by your watchfulness; and also for your own sake to guard yourself against contagion.

Do not imagine that syphilis is a disease of the poor and the slums only. You will be surprised how often you will meet with it in the so-called best families. Therefore, be on your guard all the time.

Tuberculosis.—This disease is caused by the bacillus of Koch and it is usually taken into the body through the respiratory tract.

It is very frequent in infancy and childhood, much more so than we used to believe.

You know how often we see young adults die from this disease, but I do not think that you know that twice as many infants die from the same cause during their first two years of life.

Children are very susceptible to this form of infection, the more so the younger they are, and unfortunately the chances for their being exposed to it are very great.

It is not necessary that a child be near the source of infection for any length of time, one single exposure of a very short duration will often suffice.

How many people do you think are going around unaware of the fact that they are thus infected?

How many people who do know that they are afflicted by this disease have taken the pains to acquire even the first principles of hygiene and prophylaxis, so as to be enabled to prevent their spreading this scourge of humanity?

Look at our public thoroughfares sown with expectorations, in spite of the signs prohibiting this filthy habit. Sit in the street car and have the person on the seat across from you cough without guarding his mouth. Go to visit a patient in the last stages of the disease and watch him expectorate all over the floor. Observe these and many other similar and equally unsanitary conditions and you will no longer wonder that tuberculosis is prevalent and that those most susceptible to it, the children, are its prey.

You will ask me how do babies get tuberculosis, do they bring it into the world, is it inherited?

No, it is not a congenital disease and only the disposition towards this infection is inherited.

How do babies get it then?

Usually from the mother, or the nurse or some other person that handles it. I have just come from a consul-

tation to see a baby seven weeks old which is dying from tubercular meningitis acquired from its unsuspecting mother.

The older infant learns to walk and it will then quite naturally fall. Who was living in that house or flat before; has the father ascertained this before the family moved in?

Not long ago I saw in one of my dispensaries four children from one family. They had always been well, and their father and mother were strong, healthy, clean working people, the best kind of people we have in this country, according to my opinion. Lately the children had been ailing and one child had died; good reason for them to worry. I found that everyone of these four children had tuberculosis in some form or other, the two other children were found to be suspicious upon examination. Where did they get it? I did a little investigating and found that a few months before they had moved into their present abode and that they inhabited the whole cottage. Further investigation revealed the fact that before this family moved in, a family of foreigners, one of the unsanitary kind, had been living there and that the head of this family had died there from tuberculosis. Do you wonder any longer? Will you also believe me if I tell you that the Health Department saw to it that this cottage was disinfected and renovated?

A few days ago I saw a child three years old die from tubercular meningitis. It was sick only eight hours, so the mother told me; her sister has been suffering from a tubercular spine for several years.

The different forms in which we observe tuberculosis in childhood do not vary from that in the adult except in the lungs. We do not see anywhere near as much of this in children, and then it is more in the bronchial glands

than in the lung tissue. The glands are a favorite site for tuberculosis in children anyhow, and you will now easily understand this from what has been said about the function of the glands in infectious diseases.

Tubercular disease of the bones and joints, peritonitis and meningitis are also preeminently affections of young people. So is also the so-called miliary tuberculosis (from milium the millet seed), meaning a sudden sowing out of the infection all through the body when we will find these small foci of the disease in large numbers.

Quiz

What is meant by the terms infectious and contagious?

What may happen when a germ invades the body?

What do we mean by the terms virulent and avirulent?

What is immunity?

Can we suffer from an infectious disease once only?

Are children predisposed to infections?

What is an antibody?

Which babies are more immune?

Why do we call a disease a disease of childhood?

What do we mean by the terms: sporadic, endemic, epidemic and pandemic?

Does climate alone produce infectious diseases?

Are infectious diseases preventable?

May any infection remain localized?

Why do lymph-glands swell?

Why do we have fever in infections?

How may bacteria act upon the body?

What is antitoxin?

How does the injection of antitoxin act?

What do we understand by immunizing doses of antitoxin?

Can we tell if a person has antitoxin in his blood?

What are vaccines?

What is the agglutination test?

What is an exanthematous disease?

What is incubation?

What is the prodromal stage?

What is the stage of efflorescence?

What is the stage of desquamation?

Which are the most troublesome symptoms in measles?

What should we guard against in measles?
How is the desquamation in measles?
How is the desquamation in scarlet fever?
Which is the most dangerous part of scarlet fever?
For which complications must you watch in scarlet fever?
How long should a scarlet fever patient stay in bed?
What is scarlatina?
How would you describe chicken pox?
Should a child with varicella be permitted to scratch itself?
What is variola?
Is vaccination successful?
Should you be vaccinated?
How long does vaccination protect?
What is the lasting effect of smallpox?
What causes diphtheria?
Where do we observe the principal symptoms of diphtheria?
What is most to be feared in diphtheria?
Which are the stages of whooping cough?
What is most to be feared in whooping cough?
Why do we perform lumbar puncture in epidemic meningitis?
What is the other name of infantile paralysis?
What do we understand by grippy infections?
How do the grippy infections spread?
How can you prevent the grippy infections?
Which are the forms of pneumonia?
How would you get the sputum in a baby?
What is pleurisy?
What is empyema?
What should you look out for in typhoid?
How should you protect yourself against typhoid?
What is the scientific name for inflammatory rheumatism?
What are growing pains?
What is understood by chorea minor?
What should we fear in the rheumatic infections?
How can we prevent sepsis?
Which are the chronic infections?
What other name do you know for syphilis?
Can we see syphilis in babies?
How is tuberculosis transmitted?
What causes tuberculosis?
What precautions would you advise against the spread of tuberculosis?

CHAPTER IX

THE NURSING OF SICK CHILDREN

The Premature.—The infant born before the normal end of pregnancy is called premature.

It is placed into extrauterine existence in a stage of development which should normally still be passed inside the uterus.

The functional insufficiency shown physiologically even by the mature newborn is, therefore, more pronounced in the premature, and this corresponding to the stage of its development at birth. It shows thus a lack of vitality and an insufficient power of resistance toward the demands of extrauterine life. This lack of vitality is, however, only relative and it must not be confounded with the absolute which is based upon a morbid disposition.

If we measure the growth of these infants not according to the time of their birth, but according to the time elapsed since conception we will find that it is about the same as we would expect it to be in a normal infant. In consequence we will see that the earlier the fetus is born, the greater will be its relative lack of vitality and the less will be its viability. The organs are, however, fully able to perform their functions.

But, we must not forget that in many of these cases an absolute debility or a morbid disposition will also be found because the prematurity was due to sickness of the mother of the fetus, with the result that it also may then have been born suffering from some illness.

The causes of premature birth are many and it may

not always be possible to determine with certainty which one was at work.

The most frequent cause is syphilis. Other chronic diseases of the mother are: tuberculosis, alcoholism, diseases of the heart or kidneys, infectious diseases; also local disease of the uterus, injury, or twin pregnancy.

Nor must we forget that the physician is at times forced out of consideration for the health of the mother to induce premature labor.

Clinically the temperature curve is of the greatest importance in these cases as it indicates the weakness of the whole organism. These infants usually show a considerable drop in their temperature soon after birth, down to about 85° F., they may then feel icy cold to the touch, but this must only be regarded as a danger signal if you should not succeed in bringing the temperature up to about 95° F. on the second day by artificial heat.

Your first consideration should then be to keep these babies warm, but not too warm, because they will very quickly suffer from this.

As soon as the premature is born it should be quickly wrapped in blankets and surrounded by hot water bottles.

You should not bathe it, as the exposure in the first bath may be fatal, but you oil it, and then wrap it either in cotton batting or in a heated blanket.

In a hospital, or similar institution, you will often find automatic incubators for these cases, or even incubator rooms; but, the former are not quite easy to regulate and are liable to get out of order; the latter are rather hard upon the nurse. Still, when obtainable and in working order they should be used.

We have found out experimentally that the most suit-

able temperature to keep these babies in is 86° F. and never more, because this may prove dangerous for the child.

In the private house, where these incubators can not be obtained, you have to be satisfied by a makeshift of your own, you can do this with a little ingenuity and you will be pleasantly surprised how well you may succeed.

An easy way to do this is to take the child wrapped in a blanket or in cotton, put it in its crib, or into a basket, and then to place on each side of it two hot water bottles or quart fruit jars. One of these is changed every hour, day and night. Naturally, you must be informed of the child's body temperature by frequent measurements with the thermometer.

Next in importance comes the respiration of the premature. Its center of respiration is underdeveloped, and, for this reason, respiratory failure is a frequent cause of danger or even death. Asphyxia and cyanosis may set in suddenly at any moment during the first week of life. They are especially liable to set in after feeding.

You should, therefore, watch your little charge continuously so as to be ready to stimulate the weak respiration, either by taking the baby up and slapping it and, if possible, making it cry, or by stronger measures, such as a warm bath at 104° with cold showers over its nape and back.

Atelectases, that is failures of parts of the lung to expand, are also frequently found in the premature.

Now comes the grave question how we should feed these babies and what amounts.

They need a food of a high caloric value, because their requirements are also high; depending upon the stage of development at which they were born their de-

mand for food may be as high as 150 calories for each kilogram they weigh.

In smaller prematures especially you will find it quite difficult at first to administer any food at all. Giving the breast is usually out of the question. When possible you give the breast milk in the bottle, otherwise you will have to use the medicine dropper, Breck feeder (Fig. 31, page 105), or gavage.

During the first few days you will sometimes have the greatest difficulties in administering as much as two ounces during the day and often you will have to be satisfied if you can fulfill the baby's caloric requirements by the end of the second or third week.

Mother's milk is the only food for these infants, but unfortunately, owing to the premature birth and to the conditions which led to it the mother will, in quite a considerable number of cases, not be able to furnish even the small amounts needed. In such an event we must try to get milk from some other woman. This is comparatively easy in institutions but in private practice it is frequently very difficult, but possible.

About one year ago I was called into the country to see the surviving one of eight months premature twins. The little girl had weighed four pounds at birth, but had gone down to three and one-quarter pounds when I first saw her, when she was seven weeks old.

The mother did not have any milk for her. On inquiry I found that there were three nursing mothers within a radius of about three miles who had strong healthy babies.

When the urgency of the case was put before these kind hearted women they gladly promised to let us have all their milk they could spare.

For the next sixteen weeks the father of my little pa-

tient drove ten miles every morning to collect this milk which was given boiled in the bottle.

When the baby was thirteen weeks old these women's

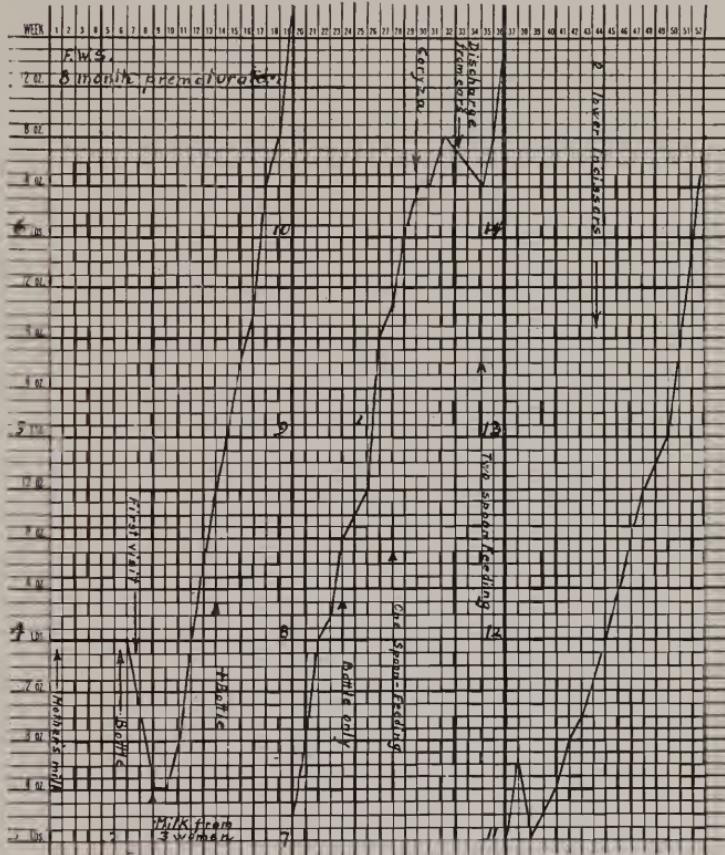


Fig. 67.—Weight chart of premature.

milk did not suffice any longer and we gave modified cow's milk in addition after each feeding. At twenty-three weeks we could dispense with the human milk altogether and the result of our feeding is illustrated in the accompanying chart. (Fig. 67.)

If breast milk is unobtainable then we shall have to resort to unnatural feeding, but this will lessen the chances of the baby considerably.

What are the chances of the premature to survive? Those weighing four pounds or more are relatively easy to raise; those weighing between two and one-half and four pounds offer some chance, the more the higher the weight; under two and one-half pounds they will be saved only very rarely.

Still, you must never give up hope and you must set your pride in succeeding even against the heaviest odds.

I know a young lady, now the mother of a family, who only weighed two pounds and two ounces at birth. The lowest weight I know of in a premature that survived, was in an institution where I had the pleasure of working; this baby weighed one pound and nine ounces at birth.

Next to feeding the greatest difficulty will be found in guarding these babies against infection of any kind. Even a mild coryza may prove fatal to them. You must, therefore, insist upon it that visitors should be kept away from them. These poor little mites should never be placed upon exhibition for the gratification of the idle curious, and you must never lend yourself to attend these infants in show places, no matter how attractive the offer of remuneration should seem to you.

Everything you use for the baby or which comes in contact with it should be surgically clean, and you must prepare your hands as if you were to assist at a laparotomy before you touch it. Then only may you expect to be successful.

You will now ask me how long one of these babies requires artificial heat, or how long it should stay in the

incubator. As soon as the infant is able to maintain its body temperature and is at the same time gaining steadily, though perhaps slightly, so soon may you gradually begin to reduce the temperature surrounding it.

This must be done under the regular control by the thermometer and the scales and if you should notice at any time that the baby is losing in weight or that its temperature falls below the normal, then you must give it more artificial heat at once.

I know from observation that some nurses have a special aptitude in raising the premature which seems to be lacking in others. I know one woman in an institution, a practical nurse at that, who was so expert in this work that all the premature sent there were placed under her care, and the way she did succeed, even in seemingly desperate cases, was truly marvelous.

Infectious Diseases.—Except where the physician takes these matters in his own hands, you will have to take full charge of a little patient suffering from a contagious or infectious disease and you have to make all the arrangements in the house with two points in view. First, you desire to give the greatest comfort and quiet to your ward; second, you want to prevent the transmission of the infection to the other members of the household.

When you are called to a case of this nature you should take as nearly as possible everything with you which you expect to use during the next few weeks, or even months, for your own comfort and for your patient.

Do not forget to take a warm dressing gown and slippers along; most likely you will have to get up at night a good many times and you will require them.

Arrange your affairs so that you can stay any length of time without worrying. I have often been able to

observe that a patient was made restless because the nurse was getting fidgety in her anxiety to get through.

Remember that once you are on one of these cases you can not leave until the patient has fully recovered and the quarantine has been lifted; that you can not take even a walk in the streets, much less enter a store, so have a list ready of the things you know from experience you may require.

If you should be engaged for a maternity case for about this time you should either refuse to go to an infectious case or you should notify the prospective mother that it will be impossible for you to take care of her. You must not approach a maternity case for at least two weeks after you have been looking after an infectious disease, especially scarlet fever, or diphtheria, for fear that you might transmit it to the young mother. You must be familiar with the health laws of the state and the community where you are nursing and you should observe them faithfully.

When you arrive at the patient's house, first ask to be shown to a room where you can change from your street clothes to your uniform. Not only does the uniform show the family that you are ready for work, but it is, and rightly so, a badge of authority; you also should keep your street clothes free from contagion.

Now, when properly arrayed, you approach your little patient with a pleasant greeting and a smile. In children even more than in adults, the first impression they get of a stranger will determine their future attitude toward him. You will have to live with the child for some time; you will have to minister to him and most likely have to do things to which he will object, so try to be on the best of terms with him from the very first moment and show that you want to be his friend.

You will best not touch the child right away, but give him a chance to look you over and get accustomed to your presence. There is plenty of other work for you to do as a rule.

If the physician has not done so before your arrival, you must now proceed to choose a room for yourself and the patient. In doing this remember that this will be the only abode for you and your patient and that the rest of the family have all the other rooms at their disposal and also the porch and yard. Therefore you should pick out the best room in the house. It should be located as near the bathroom as possible and should be separate from the rooms occupied by the rest of the family. It should preferably be a corner room with a south and east exposure and two windows. You should ask to have two rooms at your disposal if possible, so that the patient can be kept in one in daytime, and in the other at night, and that one can always be aired.

After choosing your room or rooms you proceed to remove all the pictures, hangings, and upholstered furniture, carpets, rugs, in short everything which can not be easily washed or disinfected.

Whenever possible you should try to get a so-called hospital bed, otherwise pick out a high single bed for your patient. Have a table or two in the room, also a chair for the physician, an easy chair for yourself and also a lounge or a bed for you to rest on; this is about all the furniture you will require. For a case of measles you should also have a screen to place between the bed and the windows to protect the eyes of the child against bright light.

Of other things you require I may mention the bedpan, a covered pail, some paper bags, gauze, absorbent cotton, glasses, cups and drinking tubes for the patient.

Quite naturally you have brought along your own certified thermometer, bath thermometer and charts.

When attending your first case of an infectious disease in a private house you will learn that a great difference exists between working in an institution which offers every facility, and the average household. If you should find that you should need other things as the case proceeds do not hesitate to ask for them, provided you can not get along without them. But, as I think I have told you before, do not spend other people's money foolishly. Learn to improvise, your patrons will surely appreciate this and you will be astonished yourself to see how well you can often get along without a great many things which you thought were indispensable.

In this respect you should follow the example set by a very able surgeon who, in order to teach his students that they did not require a lot of instruments for an operation, removed an appendix having no other instrument but a pair of scissors and a needle. Perhaps you have yourself made the observation that he who brings the greatest array of instruments is not necessarily also the best operator.

For the disinfection of the excreta have plenty of a good antiseptic on hand, like crude carbolic acid, or chloride of lime, they are better than many a one with a high-sounding name and a corresponding price. You may also wring a sheet out of a solution of one of these and hang it over the door of the sickroom or over that part of the hallway which leads to it. Not that I think that it will prevent contagion, but it will serve as a reminder to the rest of the household to keep out of the room.

Outside your room you should have a table on which the food for yourself and the patient is to be deposited.

You should eat at this table and you must make it a rule never to taste anything, not even drink a glass of water in the sickroom. This is the only way in which you can guard your own person against infection.

You should also never touch any of the dainties destined for your patient, you would be shocked if you heard the remarks made, usually unjustly, about a nurse who does not heed this advice.

All the dishes, glasses, spoons, etc., used by your patient must remain in the sickroom and you should wash them yourself.

Now, after you have seen to all these details, during which time your little charge has had a good chance to look you over, you may approach him, smooth his pillow, perhaps as your first ministration and see to it that his bed is comfortable.

The skin of children is much more sensitive than that of adults; the slightest wrinkle in the sheet may make them uncomfortable and cause decubitus, bedsores.

Pin the sheet down at the corners, so that it will stay smooth when the child throws itself around. Have a drawsheet under the buttocks so that you must not always change the whole bed and disturb your patient, in case the child soils its body. Above all see to it that no crumbs are left in the bed when the patient is allowed to eat breadstuffs.

Then you take the child's pulse, respiration and temperature, note these on your chart and also all special symptoms of the case, which may be of interest to the physician.

Remember always that you are with the patient all the time and that you have, therefore, a much better chance to observe and study the case than the physician who sees his patient only at intervals. You can be of

great help to him and at the same time best serve your patient, if you note everything, even the slightest change on your history. If you trusted to your memory you might forget some essentials. Should any question occur to you at any time note this on a pad, so that you are sure to ask the physician about it, who will be only too glad to explain any point of the case.

Your charts and bedside notes must always be written up to the minute so that the physician can tell at a glance what the condition of the patient has been since his last visit. But, do not write down any unessential matters or things which are self-evident. Let me tell you confidentially, naturally, that the bedside notes which I see daily are almost uniformly the most uninteresting pieces of literature that I can imagine, they bring so many unnecessary particulars that it is quite difficult at times to find what I am really interested in and what I should know. Write your bedside notes clearly and concisely, as you would write a telegram. Remember that these notes are proof of your understanding of the condition of the patient and that they should not be like the diary of a boarding school miss.

At the visit of the physician make your report in a businesslike way and hand him your chart and notes. Then help him in his examination so that he may proceed rapidly and with the least disturbance of the child.

You should always have your pad ready so that you can write down his orders exactly as he gives them, and make sure that you have understood every one of them. If you should be in doubt about any point do not hesitate to ask questions; the physician will not mind your asking these, but he will be annoyed if he is called on the phone every little while to explain something which he thought he had made clear to you before.

I have found it to be a very good idea if the nurse has such headings as food, medicines, baths, etc., written on her pad so that she will not overlook a single important point.

It is also of the greatest importance that you should report to the physician any unexpected or undesirable effect of one of his orders. Remember we have to do with individuals, not with cases, and that we can never foretell how a certain patient will react to any one measure, no matter how beneficial we have found it in a large number of cases.

I can not impress upon your mind too often the lesson that you must never degrade your noble profession by working mechanically and making of it a mere handi-craft, going on doing things because you have acquired the habit of doing them. Especially if you nurse for different physicians, and not for one only will you soon perceive that there are different ways of getting identical results and that you may harm your patient by insisting upon your accustomed method.

Another point which I consider of the very greatest importance is that you should do your work right and that you should watch your patient but that you must not overwork. Nothing is more annoying than to have a nurse's health give out in the midst of a serious case and to have a sick child get accustomed to a strange face.

The physician may be so interested in his patient that he does not realize that he is overtaxing your strength. Insist, except it should be during the critical stage of the disease and only for a day or two, that you have eight hours out of the twenty-four for yourself. Take an airing daily and get sufficient sleep. From what I have told you of infections you will realize, I trust,

that you will only be able to resist the invasion of the germs if you keep yourself in good health.

Should your case prove to be a very difficult one and should it require continuous attention and watching then you should request the physician to give you aid by sending a second nurse to relieve you.

When two nurses are on one case I have found it best to suggest to them to take alternate eight-hour shifts. For instance nurse A. is on duty from 10 P. M. to 6 A. M., nurse B. from 6 A. M. to 2 P. M., nurse A. again from 2 P. M. to 10 P. M., and so on; in this way each nurse gets one full night's rest every second night and she is still at hand in case of urgency.

Let us now rapidly pass before our mind's eye the different infectious diseases and the special care each one of them may require.

Measles.—This disease requires special attention to the respiratory organs. The most prominent symptom and the one which distresses the child most is the dry cough which usually racks its body and prevents sleep. If you find that your little patient is getting exhausted ask the physician for a narcotic; a good sound sleep will often do more good than anything else. Also get the permission of the physician to employ a croup kettle and a steam tent over the bed, this will frequently relieve this cough quickly.

Keep the nostrils and upper lip well greased with some simple ointment such as zinc oxide salve or cold cream. The discharge from the nose causes excoriations, sores.

The eyes should be bathed frequently and the discharge from them be removed carefully; the eyelids should also be covered with the same kind of ointment.

See to it that the temperature of the room is always about seventy degrees and avoid any chilling of the

child, but the air in the room should always be good; and remember that fresh air does of necessity mean cold air.

Do not pull the shades down and have the room entirely dark, as I have found it so often; as I have told you before a screen around the bed to keep out the direct light is sufficient; you can not do your work well, nor keep things clean in the dark, and it also makes many children restless.

In this disease you should be quite sure that neither you nor anybody else who comes near the child is suffering from a coryza.

Watch the patient's breathing, note any sign of dyspnea or any change in the cough.

If the rash should not come out well, a condition greatly dreaded by the laity, you may bring it out by the administration of hot drinks and a warm bath or a hot bath; this will tend quite frequently to relieve the minds of the family.

Do not be afraid of bathing these children, though this should be done cautiously without exposing them. Formerly measles was often mistaken for smallpox on account of the filthy condition in which patients were kept as a rule owing to the fear of the external application of water which still possessed the people.

The hardest time in this as in many other infectious diseases will be during the period of convalescence when the careful physician insists on keeping his patients in bed while they feel entirely well and want to get up and play.

Now will be the time when you can show if you are a good nurse for children or not. You will have to think up all kinds of innocent, quiet entertainments for the benefit of your little charge. You must be a good story-

teller and you must be able to tell long forgotten fairy-tales, or make these up on the spur of the moment. Learn how to cut out paper dolls and such things. In older children spelling "bees" between you and them are a source of great amusement especially if you let the child beat you occasionally. In short you should be able to keep the child quiet, and at the same time interested so as to make it forget that it has to be in bed, but that it will rather dread the time when it has to get up for fear that these amusing hours will be no longer his.

Many a friendship can you thus form for life, and how many a time have I seen hot tears coursing down the little faces at the parting of the dear nurse.

Scarlet Fever.—Here your first and principal attention should be directed toward the affection of the throat. Watch its condition and inform the physician at once of any change for the worse. Be as gentle and at the same time as thorough as possible in swabbing or spraying out the throat, as the physician may have ordered. Naturally the child will not like these procedures, but with some tact and the proper amount of sympathy it will let you do anything not so much for its own sake, but rather because it is afraid of hurting your feelings and thus losing your friendship or respect.

The pulse must be carefully counted and the slightest irregularity or change in its quality reported.

Be on the lookout for any puffiness or swelling around the eyes, or at the ankles which may be the first sign of a disturbance in the function of the kidneys.

Keep an exact record of the amount of urine passed in each twenty-four hours, a lessening of this should be reported to the physician at once. You have learned in your training how to examine the urine; do this every

day in these cases. If you should not have a test-tube nor any chemicals, an old spoon and a candle, also a little vinegar, will make it possible for you to make a rough test for albumin.

When the child appears to be sleepy make sure that this is really not coma from heart failure or uremic poisoning, also that it is not due to a beginning unconsciousness, the first sign of an affection of the brain.

If the child should complain of pains in its joints this may be due to a peculiar form of arthritis observed in this disease. Wrap the affected joints carefully, and place them in the most comfortable position upon pillows, this will save your patient considerable suffering.

In this disease you must be prepared at any moment for sudden and unexpected complications which may set in at any time when the case seems to be progressing very nicely and you least expect anything to happen.

Do not be caught napping.

When scaling begins you can further the act of desquamation by warm baths and by anointing the skin with cocoa butter or sweet almond oil.

Chicken-pox.—Chicken-pox may become hemorrhagic, but do not allow yourself to get frightened by this, it does not influence the course of the disease.

Watch carefully for any symptoms from the kidneys, though this does not often arise in this mild infection.

Most important is that you should prevent the child from scratching itself and thus to avoid secondary infection. This is not always quite easy. But make the child as comfortable as possible, keep its skin clean and well anointed to lessen the itching. Above all keep its mind occupied to turn it away from its own body.

For the mucous membranes have simple antiseptic washes. In girls you should place a plegget of ab-

sorbent cotton soaked in one of these between the vulva, because secondary infection is here more difficult to prevent, and nasty ulcers may form.

Smallpox.—In a case of smallpox of even medium severity you will be kept more than busy in trying to make your patient at least tolerably comfortable.

Most annoying is the development of the eruption on the palms of the hands and the soles of the feet and also on the mucous membranes.

Watch the eyes very carefully, not infrequently one or more pustules will develop on the cornea which may not only mean defective vision but permanent blindness.

Before and during the stage of suppuration antiseptic baths, especially with potassium permanganate, may make the patient a great deal more comfortable and lessen the chance of pitting.

We do not see of late the really severe cases of this disease as older writers used to report them.

Diphtheria.—In your anxiety to overcome the symptoms in the upper respiratory passages you should not forget that this is a very severe general infection in which of the internal organs the heart and kidneys suffer most severely.

Naturally you must be most assiduous in carrying out the physician's orders as to the spraying or swabbing out of the nose and throat thoroughly and to the minute. But, you must also watch the child's respirations carefully so as to call the physician at once when you notice any interference with this. He may be able to relieve the obstruction by intubation or tracheotomy and thus save even desperate and seemingly hopeless cases.

You will also have great difficulty with the apathy and aversion for food in these patients and you must use all your ingenuity in making them eat. Put only

small amounts of attractive food on the plate, a flower or a little bit of green will often make the food more attractive and the patient will taste it from curiosity. A little milk served in a new cup with a picture at its bottom may help you; also food cut up into curious figures and patterns, anything to awaken the child from his apathy and to arouse his lagging appetite.

Watch the pulse very carefully and note even the slightest change in it. Also look out for danger signals from the kidneys and keep a record of the amount of urine passed daily.

In children who have been intubated you must guard against their pulling out the tube and you must notify the physician at once. I, personally, believe that cases which have been intubated should either be in the hospital or a physician should be in attendance at the home all the time.

I do not expect you to be as experienced in diphtheria as is one revered Sister in an institution abroad, who has been in charge of the diphtheria wards for more than thirty years. Upon the day of the two-thousandth case of diphtheria, the life of which had been preserved by intubation, all during her term of service, the medical director of the hospital placed upon the wall of the building a bronze tablet in memory of the late Doctor O'Dwyer of New York, who introduced this life-saving operation. This Sister knows exactly the time when intubation is urgent. And further than this, once when one of her little charges had pulled out the tube and there was danger of his suffocating before the arrival of the physician, she performed the intubation herself and thus saved the child.

You must, however, be familiar with the instruments

used in intubation (Fig. 68), so that you can clean them and you must know what assistance is required from you.

You must also know thoroughly the instruments



Fig. 68.—Instruments for intubation.



Fig. 69.—Tracheotomy tube.

needed for tracheotomy and the way this operation is performed, and it is necessary that you can take out the inner tube and keep it clean or remove obstructions from it. (Fig. 69.)

After intubation and tracheotomy, and also if there should be a paralysis of the soft palate, you must be very careful with the feeding. These little patients often can not take liquids; these may go into the wrong passage or may come out through the nose, because the soft palate can not close the nasopharynx during the act of swallowing.

You must feed these children with semisolid foods.

You will ask me, how are we going to give them water or other liquids which they are surely in need of?

All you have to do is to make the liquids semisolid by the addition of gelatin or agar-agar and the child will not only be able to swallow them but will also enjoy them.

Remember that convalescence from this disease is very slow, and that these patients must be kept upon their backs for at least two weeks after the disappearance of all symptoms.

In some cases the blood vessels may be so severely damaged that the slightest injury, as from a hypodermic, will leave a black spot. Do not fail to tell this to an anxious mother.

By no means rarely do we see a rash appear about ten days to two weeks after the administration of antitoxin. This is called serum-exanthema; it may be itchy and trouble the child for a few days, but is nothing more than an inconvenience, when we think of the benefit derived by the antitoxin.

Whooping Cough.—The convulsive stage of this disease should run its course without any fever, any elevation of temperature should, therefore, very carefully be watched for, as this will be the first sign of a complication by a secondary accidental infection such as an otitis media or bronchopneumonia or the recrudescence

of an old tubercular focus. You must for this reason take the temperature regularly all through the disease.

During the attacks of coughing, and the vomiting which frequently accompanies them, you should hold the child's head, remove the mucus from the mouth, and otherwise make it as easy for the child as you can.

Should the child vomit immediately after eating or the administration of medicine then this should be repeated at once when the attack is over. You will be astonished at first to observe how a child after passing through one of these paroxysms and the severe vomiting, will be quite happy again at once and relish its food.

The number of these attacks is determined, to some extent at least, by the nervous makeup of the child. By your quiet demeanor in telling the child to resist the impulse, you will often be able to reduce their frequency.

In severe cases with sixty or more paroxysms the sleep of your charge will quite naturally be seriously disturbed and you should make the child go to sleep as often as possible to preserve its strength.

The heart may also suffer an acute dilatation in severe cases, and you must observe the pulse very carefully.

Pure air is one of the first things needed by every case of whooping cough.

Mumps.—This is usually such a light disease that you will rarely be called upon except in an institution.

Keep the patient and especially the affected regions of the face warm and watch out for possible, though rare, complications on the part of the genital glands.

Epidemic Cerebrospinal Meningitis.—In this disease we observe a condition of extreme irritability of the sensitive and motor nerves. The child may resist the lightest touch as unpleasant, or even painful. Strong

light, or a loud noise, will affect it similarly and the little patient is worried every time anybody approaches his bed. He is restless on account of the headache and neuralgic pains he suffers.

You must keep these children extremely quiet; wear slippers, and walk on tiptoe, so as not to cause any jarring of the bed. The rustle of starched clothes, or a silk petticoat will annoy him. The room must be in semidarkness and at night the lights should be shaded toward his bed.

The skin is very sensitive and the lightest touch will leave a red mark.

Feeding is very difficult in this disease. Not only is it interfered with by the nervous vomiting, but the child has entire lack of appetite and usually severe diarrhea. One case I remember well; the people were poor and could not afford a nurse and I kept this patient from starvation by administering food by rectum and through the stomach tube during six weeks.

An ice cap to the head is often of benefit and also hot packs and hot baths to reduce the nervous irritability.

Pneumonia.—Both forms of this disease, bronchopneumonia, as well as croupous pneumonia will demand a great deal of your attention.

The primary location of the disease will necessitate your watching the respirations and observing if the child gets enough oxygen. On your chart you must note the number of respirations per minute very carefully, because an increase in the rate may mean a further involvement of lung tissue, while a decrease may be due to increasing weakness of the patient.

The pulse will tell you the condition of the heart, which will be affected both by the interference with the circulation and aeration of the blood and by the poison

absorbed from the lungs which permeates the whole body.

The temperature is a good indication of the condition of the child in croupous pneumonia. Do not, however, regard the first drop in the temperature as a sign of the beginning crisis. Frequently you will see a remission of the fever, a so-called pseudocrisis, followed by a renewed rise, and then the real crisis with its rather sudden drop from high temperature to a subnormal one.

This is the time when you must watch the heart even more carefully because collapse may set in due to the weakened condition of the whole system.

In bronchopneumonia the fever is quite irregular and does not offer any indication of the condition of the patient, except that a normal or subnormal temperature may indicate to you a critical condition, especially if the pulse and respiration should remain rapid, as this will indicate that the child is so low that it can no longer get up the normal reaction to the infection, namely the fever.

The position in bed of children with pneumonia should be changed frequently in order to prevent, if possible, further involvement of the lung by hypostatic congestion. Babies should be carried around and they will be very grateful for the relief offered by this. Older children may be propped up with a back rest.

The pain which accompanies pneumonia is relieved best by wet packs, and by the application of mustard packs, which also ease the respirations.

These measures are also very useful in those cases in which the poisoning of the whole system may simulate a meningitis.

The air in the room should be of the purest but not cold. Young and weakly children, especially, do not

stand cold air well. The atmosphere in the room should be moist, this helps the breathing of the patient and lessens the racking cough. You can do this by having a steam kettle going in the room or by erecting a steam tent over the bed.

Typhoid Fever.—Perhaps in no other disease is nursing of so great an importance as in typhoid. You must be watching all the time.

You must note the number and quality of the stools; the amount of food the patient takes; how much liquid you are able to administer; how much and how soundly he sleeps; if his mind is clear, or if he is apathetic or delirious.

We have given up the full baths in this disease which were in vogue a few years ago and we employ now sponge baths to reduce the temperature and to stimulate the patient. Children, that is most of them, object strenuously to cold sponges and the excitement caused by them may defeat our purpose. Sponge baths given at a temperature of 5° F. below that of the body of the patient, are quite as efficacious and not in the least obnoxious to children.

These and an ice cap to the head will also often diminish the restlessness so characteristic of this disease, which has also been called nervous fever.

The patient should take considerable amounts of liquid to keep the kidneys flushed out and to carry away the toxins by these means.

Nowadays we feed these children a good deal more than we used to do and we see them get up less weakened. Sugar is the best food here to raise the caloric value and it is borne well.

When the temperature has come down, which it does by lysis, you can never tell if this is the end of the

disease. One or more relapses may set in and protract the disease considerably.

The Rheumatic Infections.—In rheumatic infections your principal duty consists in making the patient as comfortable as possible and in watching the pulse.

The former you succeed in by placing the affected joints in the position which will best relieve the pain; wrapping them in cotton or flannel cloth and by applying heat.

The slightest irregularity or change in the quality or rate of the pulse must be reported to the physician at once, because this may mean the onset of an endocarditis, which may either be fatal or leave your patient an invalid for life.

At the slightest indication of an affection of the heart, perhaps indicated only by an uncomfortable feeling, or a pain in the region of this organ, you should, with the permission of the physician, apply an ice bag over this organ.

Let me tell you here that beneficent as the ice bag often is in children it may be very dangerous if applied directly to the skin. Parts of the skin may become frozen and later gangrenous. Always place a thick piece of flannel between the skin and the ice bag to prevent this unnecessary occurrence.

Children suffering from chorea minor should be kept in bed and must be very quiet, as any excitement may increase the choreatic motions, which when severe will exhaust the child.

No visitors should be allowed. In the hospital these patients should be placed in a private room, or their bed be surrounded by screens; this is not only for the sake of the patient himself; but also for the protection of the other inmates who may acquire an imitation chorea.

The chorea may also make chewing impossible, or at least difficult, and we will have to be satisfied to administer liquids and semisolids. I believe that these children should have a strict vegetarian diet.

Warm baths followed by hot packs are very beneficial.

Tuberculosis.—An entire volume could be written on the nursing and care of this infection and for this reason I shall be rather short, though I fully realize the importance of this subject. I think, however, that you should either receive special instruction in this or that you should take a postgraduate course.

Except where the child is suffering from an acute exacerbation of the disease, the object of your ministrations should be to strengthen its body and to make it more resistant against the germ by the liberal application of the two supreme remedies for this affliction: *Fresh Air and Sunshine*.

These can be best procured in properly equipped institutions at the seaside or in the mountains. Day-camps, floating hospitals and similar arrangements have also accomplished a great deal of good. But, unfortunately, the accommodation in all these places is so woefully below the number of those who really should be able to enjoy them that we have to be satisfied with makeshifts at the home.

Young children should be out of doors as much of the day as possible and the mother should be taught that they must sleep in a room the window of which is kept open. Older children can spend their time on an improvised sleeping porch, which can be erected at comparatively little expense, or they should sleep with a window tent.

The skin should be kept in the best of condition by

the liberal application of water, in older children cool water.

In tubercular disease of the lungs you must be teacher as well as nurse. You must imbue these children with the principles of hygiene. You must impress upon them that they must not endanger the lives of those dearest to them by their carelessness; that they must dispose of their sputum so that it can not do any further harm; and that above all they must keep their hands as free from the germs as possible.

I have a great admiration for those noble women among the nurses who have taken up the work of visiting nurses to these poor unfortunates and I know from observation how much they can do to brighten these lives, blighted in the bud, so to say, and what splendid results they achieve, many times against the heaviest odds. I consider this one of the finest callings for some of you who feel not only that you can do this work, but also that you can love it.

Little can be done for the poor children with tubercular meningitis, except to make them as comfortable as possible.

I want to give you a word of warning, however. It happens not infrequently that these little patients, after days of unconsciousness will wake up some morning, sit up in bed, talk to you quite naturally and begin to play. Do not let yourself be deceived, and above all do not instill even a ray of hope in the poor, despairing parents. This is not a sign of recovery. It only means that the brain has become accustomed to the increased pressure. This stage of brightening may last twenty-four, or even thirty-six hours, then comes a relapse into unconsciousness which will soon be followed by death.

Quite different is the prognosis in tuberculosis of the

glands and to some extent of the bronchial glands. These children will be benefited greatly by your care and by the right feeding. They require plenty of fresh air and, where the family can afford it, a change of climate at the seashore or in the mountains.

For these cases as well as for those of tuberculosis of the bones or joints and of the peritoneum we have learned during the last fifteen years that the sun treatment, worked out by the Swiss physician Doctor Rollier, has really done wonders in a great many cases when employed in time; but you should not undertake this without special instruction in its application, and after some institutional experience.

Other Diseases.—Though the care of infants and the nursing of children suffering from one of the infectious diseases will form by far the greater number of cases in which you are called upon to take care of children, they are, naturally, subject to other diseases as well, and I shall now proceed to give you a few salient points avoiding as much as possible all repetition.

Medical Cases.—These will include chronic diseases of the heart, either congenital or acquired during one of the infectious diseases, of the kidneys, the digestive organs, the respiratory organs and metabolic disturbances such as diabetes.

In all these disorders your powers of observation will many times aid the physician materially in arriving at a diagnosis and in pronouncing his prognosis. The latter function, especially, is one which is entirely within the province of the physician and you should never allow yourself to utter a single word about the possible outcome of any illness no matter how light or severe it may appear to you.

Do not give in to temptation, nor be coaxed into an

unguarded utterance by the anxious mother. Refer her to the physician as the only one who may give her this information, and even he will often find this impossible.

A rashly given opinion may and often will hamper the physician in his work and also many times destroys the confidence of the family in him.

As to your making a diagnosis and speaking of this to the family, that is too preposterous to discuss even here.

But be sure to communicate to the physician all your observations, no matter how trivial they may appear to you. Do not be afraid of being laughed at. An experienced physician will always appreciate your efforts to help him and he will be only too glad to explain to you the importance or unimportance of any symptom, because he realizes that you can do your best work only when you fully know what is expected of you.

In diseases of the heart the pulse is of the greatest bearing upon the case. Watch it carefully and note any change in its rate, quality and fullness; also if it is irregular or not.

In these cases as well as in diseases of the kidneys the urine should also be measured carefully, its daily quantity and the number of times it is voided must be noted on your chart. Tell also about its color, its odor, if it is clear or turbid, or if it contains any abnormal admixtures. Also if its passage seems to cause pain or irritation. Have a sample ready for the physician every day.

In disturbances of the digestive organs you will have to watch the amount of food taken, if it causes any distress or eructations of gas. Watch for nausea, which is not quite easy in children. If the child vomits you should know how soon this happens after taking food;

if it was with retching or without any effort, how it smelled and looked; if it showed any undigested food or was only bile-stained mucus. Also keep it for the inspection of the physician.

The stools also deserve your closest attention. Their color, odor, reaction, if acid or alkaline, the frequency of their passage, if they demand considerable effort, or are squirted out or run off at all times; the amount of gas passed with them or independently; if they contain mucus, blood, undigested food, particles which look like parasites, or shreds of mucous membranes; also if they are passed involuntarily. Keep the last stool passed, or anyone which seems to you abnormal for the inspection of the physician.

In respiratory diseases the character and rate of respirations must be noted; if they are easy, labored, deep, or superficial, regular or intermittent; if there appears to be any obstruction, and where this seems to be located; if they are equal on both sides or if one side hangs back.

A very important sign is if the child can rest equally well on both sides or only on one side.

We can learn a great deal from the cough of our patients; if it is dry or loose, or changes from the one into the other; if it is painful, labored, or without effort, the duration of coughing spells and when these occur; if they are massed together at certain times of the day or night, or come at all times; if they awaken the little patient or do not let him sleep.

Much may also be told from the examination of the sputum. In small children it is swallowed, but you may obtain it in these even as I have told you before. Its color, odor, quantity, quality, if mucous or purulent, if it comes in gushes, or only occasionally, all these condi-

tions you must observe. The physician will also often require a sample of this for microscopic examination; you should then make sure that it is really sputum and not saliva which you have put into a wide-necked bottle for him to take along. Be also sure that none of it adheres to the outside of the bottle.

Should there have been a hemorrhage from the lung keep it and the bedclothes, etc., which have been soiled, so that the physician may learn of the amount of blood lost.

In metabolic disorders and also in the disturbances of the digestive organs the quality and quantity of the food is of the greatest importance. The nurse must be a good cook as well, so that she can make even the most limited diet attractive to the child. Many times will you be required to weigh every bit of food which you give and how much of it the child takes and to keep a careful record of this.

Let me tell you that I have found really good dietitians rather rare among nurses, and I think more attention should be paid to this branch in training schools.

Do not forget that children get tired very easily when they are given about the same things day after day. Use your ingenuity and if you can not change the things you are allowed to offer, you can at least alter their appearance and thus deceive the child, and make it take the same things which it has refused before.

Surgical Cases.—The care of children after operations is about the same as in adults. Only remember that during the operation their bodies must be exposed as little as possible and that they suffer from shock the more the younger they are.

They do not stand prolonged operations very well but the effect of the general anesthetic wears off in them

much quicker, nor does it cause as much vomiting as in the adult.

You must be an expert in bandaging and you must be able to renew this at once when soiled without disturbing the site of the operation. The bandage should be applied snugly and still must not press upon any part of the child's body.

Use only zinc oxide adhesive plaster in children, and as little as possible of this because it produces irritation quite readily.

See to it that the child is placed in the most comfortable position and that it is turned over whenever this is permitted.

When plaster of Paris casts have been applied to a limb watch the color of the fingers and toes, if they should get blue and numb or cold, notify the surgeon at once because this is an indication that the cast is too tight, and has interfered with the circulation.

Also watch the edges of the cast that they do not cut into the tender skin and flesh; and report to the physician as soon as you notice a bad odor arising from underneath the cast.

The child must remain in bed quietly and it must not be permitted to throw itself around or to change its position without your aid.

If weights should have been employed you must be very careful that they really have the desired effect and that the little patient has not changed its position in bed, so that the weights can no longer exert their traction.

After **operations on the nose or throat** one must look out for secondary hemorrhage. Even after as slight an operation as that for the removal of adenoids or en-

larged tonsils the child's life may be endangered by the continued flow of blood which the child will swallow.

Should a tampon have been placed into the nostril children are very apt to remove this unbeknown to you.

Nervous diseases are perhaps the most difficult cases you will be called upon to take care of. No other disturbance will demand so much of your attention, so much tact and judgment on your part.

Watch the child's every move. Be on the lookout for even the slightest spasm, change in speech or in disposition. The mental attitude of the child may undergo strange involutions. Frequently a child who has been your pet and who seemed to be very fond of you will suddenly turn against you so that you can do nothing with it any longer. Do not let this hurt your feelings, but remember that the child is ill and, therefore, not in his right mind.

With these nervous children you must be firm and quiet, do not lose your temper, hold yourself well in hand, and you will eventually win.

You must be acquainted with the different forms of delirium and of convulsions, so that you can describe everything that happened to the physician.

Diseases of the eyes demand frequently the instillation of drops or the application of ointments into the conjunctival sac and this is not always easy to perform; the child may fight you off or shut its eyelids so tightly that you can hardly open them. Still it is essential that this should be done and done well. Do not hesitate to ask some member of the family to help you, and be sure that the drug is really applied where it should be.

In infections of the eye you must make all applications exactly as ordered by the physician and by the

watch to the minute. Any neglect on your part may mean permanent blindness for the little patient.

If the eyeball itself should have been injured or attacked by the disease be very gentle and most careful for fear the eye may rupture in a struggle.

Skin diseases require most of all that you prevent the child from scratching itself. This may not only aggravate the original lesion but it is almost sure to cause secondary infection with pus cocci, or, if the disease of the skin should itself be of an infectious nature, it may be the means of spreading it to other parts of the body.

It is useless to apply ointments to scabs or crusts on the skin. You might just as well put the stuff on the wall. Soak off the crusts first with oil, or remove them with a forceps, and then apply your medication.

If an ointment should have been ordered to be applied, put it on thick enough. It has been placed into your hands to be used for the patient, not to be preserved.

Medicated baths are often administered in these cases. Make sure what kind of bathtub will be best for the particular bath to be given. Some drugs attack metals and are changed by these and become inert or form entirely different compounds.

Be careful of your own hands and person that you do not become infected yourself. Better wear rubber gloves when taking care of infectious skin diseases.

Quiz

What is a premature?

Which are some of the most frequent causes of premature birth?

What must you watch most carefully in premature?

How should you care for a premature newborn?

What is the best temperature to keep the premature in?

Why should you watch the respirations of the premature?

What is the caloric demand of the premature?

- How may you feed a premature?
What is the best food for the premature?
How would you determine the chances of a premature to survive?
Why and how should you prevent infection of the premature?
How long does a premature require artificial heat?
How would you choose a room and prepare it for the care of a child suffering from an infectious disease?
Should you take care of a maternity case after one of the infectious cases?
How would you protect the eyes of a child ill of measles?
What do you need in the patient's room?
Where should you keep the patient's dishes, etc.?
How should you prepare the bed?
What should go into your charts and bedside notes?
Why should we individualize?
Why should you look after your own health?
How would you care for a child ill with measles?
What is the best room temperature for a case of measles?
What should you do for a child during its convalescence?
How would you care for a case of scarlet fever?
How would you care for a child ill with chicken pox?
How would you care for a child suffering from smallpox?
How would you care for a child ill with diphtheria?
What is intubation and when is it done?
How would you feed a child which has a paralyzed palate?
What is serum exanthema?
How would you care for a case of whooping cough?
What would you do for a child with mumps?
What would you do for a child with cerebrospinal meningitis?
How would you care for a child ill with pneumonia?
Could you tell from the temperature chart if a child has bronchopneumonia or croupous pneumonia?
Would you keep the windows open when taking care of a young child ill with pneumonia?
How would you take care of a case of typhoid fever?
How would you take care of a child ill with inflammatory rheumatism?
How should you apply the ice bag to a child?
How would you care for a case of chorea?
What have you to observe when taking care of a child suffering from tuberculosis?

- What is the Rollier treatment?
- Should you pronounce the diagnosis of a case?
- What should you observe about the pulse?
- What must you know of the urine of a sick child?
- For what should you examine a child's stools?
- What should you observe in a child which vomits?
- What is important in the respirations of a sick child?
- What is important about the cough of a sick child?
- How should you preserve the sputum for the physician?
- How can a physician estimate the amount of hemorrhage from the lungs?
- What must you know about the diet of a sick child?
- What must you observe in a child which has been operated?
- How would you take care of a child which has a plaster cast on?
- For what should you watch after an operation for adenoids or removal of the tonsils?
- What is to be observed in children suffering from some nervous disorder?
- What is your duty in children with eye diseases?
- What should you do for a child with skin disease?

CHAPTER X

PUBLIC HEALTH NURSING OF CHILDREN

BY MRS. A. L. HANSEN, R.N.

Modern public health nursing is an outgrowth of the simple form of charity practiced in the centuries before the Christian era in India, Greece and Rome, by the early Christians and the Jews of that day, when it became incumbent on all religious persons to visit the sick in their homes and to offer aid and sympathy.

It is a far cry from the crude services of the early days to the efficient nursing and instruction given in homes by the modern public health nurse, but the great underlying qualification for the nurses has remained the same.

Miss Gardner, superintendent of the Baltimore Visiting Nurse Association, in her book on *Public Health Nursing* says: "Every public health nurse would do well to know by heart St. Vincent de Paul's beautiful description of the calling of the visiting sisters given in the middle of the seventeenth century, for it is applicable to our modern nurse. 'Their convent must be the home of the sick; their cell the chamber of suffering; their chapel the parish church; their cloister the streets of the city; in the place of the rule which binds nuns to one enclosure there must be the general vow of obedience; the grating through which they speak must be the fear of God; the veil which shuts out the world must be holy modesty.' "

The nurse who seeks to do public health work because

it is steady and part time duty, or because she dislikes night work, is not going to make a success of it.

The public health nurse must have good health and great power of endurance which enables her to continue her daily rounds through the storms of winter and the relentless heat of summer. She must have executive ability, be resourceful and cooperative, have such education as will enable her to meet with the college graduate in social work on common ground; she must possess teaching qualifications, be enthusiastic, have a keen sense of humor, be tactful, firm and determined.

The public health nurse must be graduated from a hospital of the first class and must be registered in the state in which she nurses. The standard is high, but not too high for qualification for one who must occupy the position of trust given to a public health nurse.

The salary paid the public health nurse is not so large as that paid institutional or private nurses, so no one will go into the service for financial reasons alone. There is usually a period of two or three months' probation asked by visiting nurse associations, during which time the salary is low and at the end of the period the nurse if she chooses or is acceptable to the association is placed on the regular staff. The salary for staff nurses ranges from \$840 to \$1,080 yearly, for supervisors \$1,200 to \$1,500 yearly, and superintendents from \$1,800 up.

Superintendent.—In visiting nurse associations there is a superintendent in charge who is well trained in general public health nursing, and who should possess great power of diplomacy. The duties of a superintendent vary from those toward the board of managers and the nursing staff, to those connected with other social agencies and the general public. She must be

able to speak at public meetings, and tactfully represent her association at community gatherings.

Supervisors.—The supervising or head nurses come in direct daily contact with the staff and patients. Where substations are used in addition to the general office, the supervisor there meets her group of nurses for daily conference and receives reports. She is directly responsible to the superintendent for all matters concerning the districts in her charge. The supervisors are usually postgraduates from a school of public health nursing. They must have had a varied experience in public health work.

Office.—The general clerical work of the office is done by an ordinary clerical force. It shows great lack of efficiency to employ nurses for this purpose. In very large associations a nurse office supervisor is sometimes employed, but, as a rule, a professional woman is not needed and of much more use on the nursing staff.

Postgraduate Courses.—Many of the larger associations now offer a postgraduate course in public health work, usually in connection with a university. Nurses desiring information in regard to these courses can obtain it from the National Organization of Public Health Nursing in New York City.

To one ignorant of public health work it would seem that such intricate organization is not necessary for the care of the sick in their homes. Actual bedside care is only a fraction of the work done, the duties are so numerous that without good organization and system the work could not be done efficiently.

Equipment.—The uniform most generally adopted for visiting nurses is a dress of blue gray, with turned down collar and soft linen cuffs; a long blue coat, heavy in winter, light weight for spring and autumn, and a plain

black hat. (Fig. 70.) The nurse carries a bag equipped with packages of sterile gauze and cotton, adhesive plaster, roll of old clean linen, two sizes of bandages, two bottles of alcohol (one used only for sterilizing the thermometer), lysol, boric acid crystals, permanganate



Fig. 70.—District nurse in uniform.

of potash, sweet oil, zinc oxide ointment and powder, and green soap. A linen case is provided to hold catheters, douche nozzles, etc., a fountain syringe is kept in another bag of stout linen and a small pus basin goes into another. Two aprons, towels and paper napkins,

together with a supply of bedside note forms and information cards complete the equipment. (Fig. 71.)

Records.—The information required by a district nursing association includes much in regard to the family as well as the patient. The work of the visiting nurse is not alone for the individual, but, to benefit the community, and her statistics must, therefore, include



Fig. 71.—Contents of district nurse's bag.

much information in regard to ventilation, general sanitary condition of homes, milk supply, etc.

Case Work.—Prenatal instruction to, and supervision of the expectant mother may be considered first. The nurse is frequently called into the home ahead of the doctor, and it is her first duty to get a doctor for her patient. In the case of foreign-born women it is often difficult to get the consent to employ a doctor, or at least a male doctor. A midwife is usually chosen, though a woman physician is not refused. The nurse

advocates the employment of a good physician and frequently succeeds.

If a midwife is to deliver the case the nurse tells the patient that she can not have both nurse and midwife, but, as the latter is usually not called until labor, the nurse will continue during the prenatal period. This is the only instance where a nurse may hold a case without a physician in attendance.

The nurse calls every two weeks during the first seven or eight months of pregnancy, and every week during the last month. She endeavors to have the patient worry as little as possible, and presses upon her attention the consideration of outside things to take her mind away from her condition. If any abnormal symptoms develop, the doctor is at once advised, but, every care is taken to make as light of them as possible to the patient.

The special points to be noticed are:

1. Urine, twenty-four hour specimen taken every two weeks, examination can be made by nurse with doctor's consent.
2. Condition of bowels, if constipated advise laxative diet and more fluids, and show how to prepare.
3. Care of the skin, frequent bathing.
4. Exercise, moderate and in open air, or, if woman does her own housework advise rest in afternoons in open air.
5. Ventilation, especially of sleeping rooms.
6. Drainage. This is a good opportunity for the nurse to inspect all the drains and to advise as to care.
7. Clothing, light weight, but warm, and if possible hang from shoulders. A nurse may make a warm friend in a prospective mother by merely showing her how to make a maternity gown, especially to one who objects

to going on the street for necessary fresh air because of feeling conspicuous.

8. Food, meat only once a day, more water than usual, avoid tea and coffee and try to form the habit of drinking milk as a good preparation for nursing the baby. Alcohol in any form is forbidden.

9. Care of breasts, nipples examined, if small and flat gentle traction can be made with the fingers to draw them out; if the nipples are dry, they should be washed with warm water at night and a little cold cream on lint placed over them.

10. Abnormal conditions such as swelling of legs, varicose veins, hemorrhoids, cramps, leucorrhea, persistent vomiting, headaches, dizziness, puffiness of face or hands, neuralgic pains, muscular twitchings, or signs of hemorrhage from uterus must be at once reported to the physician.

11. If patient is to be confined at home the nurse should make all arrangements for room for delivery and lying-in period.

12. Clothing for baby must be examined and sufficient quantity obtained.

13. Necessary bedding, etc., not forgetting plenty of clean newspapers, must be arranged for.

Superstitions.—The public health nurse necessarily comes in contact with much ignorance and superstition, and at no time more than with a pregnant woman. The widespread superstition regarding maternal impressions will have to be combated, and the nurse will do well to have her mind well stored with information to prove there is no basis in fact for these opinions.

Baby Care.—During prenatal visits the nurse takes the opportunity to instruct the mother in the care of babies.

Two points on which to lay emphasis, because seldom thought of by the usual district mother, are, the tub used for the baby's bath must be used for no other purpose; and diapers must be washed after every urination. Mothers are in the habit of using the baby's bathtub for all kinds of household purposes, and then, without sterilizing, it is used to bathe the baby, and when the child gets some infection wonder is expressed as to how it came. The visiting nurse in foreign families never needs to be told of the presence of a child in the house, for she is greeted at the door with the foul fumes of diapers dried without washing.

Method.—Before commencing work, the nurse makes certain that all she requires is in the room, that there is sufficient heat, and then she closes the door and, if possible, locks it to make sure no neighbors get in to interrupt or let in cold air.

After removing her coat and cuffs and putting on her apron, the nurse proceeds to scrub her hands, and then takes from her bag a paper napkin and spreads it on a bedside table or a chair. On this she places from her bag every article to be used in care of the case, then closes the bag. (Fig. 72.)

In maternity work the baby is bathed and dressed first. Care is taken in placing the child in the water that it may not be frightened. The face is not washed in the tub, but with clean water after the baby is taken from the tub and wrapped in a warm towel. The mother is asked to watch the nurse, and her attention is drawn to special points, as the care of the eyes; each eye being washed with sterile water or saturated solution of boric acid, with clean cotton, and on no account must the cotton be dipped twice in the solution or the same solution used for cleansing the mother's nipples.

The nurse must show how to wash the baby's ears and nose, and teach that it is *not* necessary to wash the mouth, but, that things placed in the mouth must be sterile. The mother is taught to cleanse her nipples carefully before and after each nursing.

If it is necessary to take a child's temperature, the thermometer must be washed with soap and running water, and then placed in the thermometer alcohol for five minutes.



Fig. 72.—District nurse ready for baby's bath.

The district nurse must not expect to find equipment to her hand for treatments as she has been accustomed to in her institutional or private work. She will have to improvise most of the time. Newspapers or table oil-cloths will be used for rubber sheeting, shawls and comforters for blankets, and packs may be made by sewing

together several small pieces of material instead of sheets. To cover a moist compress the nurse must use the oiled paper in which the bread has been delivered instead of oil silk. Flatirons or stove lids take the place of hot water bottles, etc.

A case of sore throat or suspicious contagious disease found by the nurse must be isolated until seen by the doctor.

Tuberculosis.—One of the principal duties of the nurse is to teach the family in the care of contagious and infectious diseases. Hospital care is urged, or in the case of tuberculosis sanitorium care is urged. If the parent of a tuberculous child refuses to allow its care away from the home, the nurse must then visit frequently, and persistently insist on fresh air, cleanliness, good diet and care of the sputum.

If a bone case she must see that all dressings are carefully destroyed, and in any case see that the patient and all his belongings are isolated from the rest of the family. Failure of the family to comply should be sufficient grounds for the health department to remove patients by force in states where laws covering this exist.

Infant Welfare.—“Keep the baby well,” is the slogan of the infant welfare nurse. She visits the homes and teaches mothers the care of their babies, and unless she is a good teacher, as well as a good nurse, and has a pleasing personality and is fond of babies, she can not hope to succeed in this work.

Once or twice a week clinics for the examination of well babies are held at a babies’ dispensary. In all progressive cities and rural communities there are now sufficient of these dispensaries to be within reach of all. An infant specialist is medical director; he examines the babies brought to the clinic, advises the mothers, and

issues orders to the nurse for her direction in her week's work.

Many cities now have a central clinic which is a clearing-house for any sick babies brought into a well baby dispensary. Central clinic is held daily and in connection there is usually a diet-kitchen where a nurse from the visiting nurse staff is detailed to prepare special diets for sick babies, which are later distributed to the homes.

Little Mothers' Leagues.—Another activity conducted at the well baby dispensary is a "Little Mothers' League." Here the sisters of babies gather for instruction in the care of infants, and much of the teaching desired for the mothers has to be delivered through one of these girls. The future mothers of the community are thus also being instructed. The teaching is mostly done by district nurses.

School Nurse.—Medical inspectors examine school children and find certain physical defects which are reported to the parents, but, the carrying out of the doctor's order and the correction of the defect lies in the hand of the school nurse. Her duty is to visit the home and continue visiting until the child is in good condition.

The nurse also makes frequent examinations of the children and refers necessary cases to the medical inspector. Small dressings and minor injuries are treated in the school building by the school nurse. She also lectures and demonstrates on hygiene and home nursing to the various classes.

Working Papers.—The passage of Child Labor Laws has made it necessary for children under the compulsory school age to appear for medical examination if it becomes necessary for them to work. None are examined before completion of the sixth grade work and then only

with a recommendation from the school principal. A thorough physical examination is made of each applicant by a doctor of the department of health, assisted by a public health nurse. The nurse is responsible for issuing correct papers permitting the child to work, and she is the custodian of all the office files.

Quiz

- What are the requirements of a public health nurse?
- What is the organization of public health nursing?
- What are the duties of the different grades?
- What are your duties in prenatal work?
- What special points should you notice in prenatal work?
- What about maternal impressions?
- What should you teach about the baby's tub and diapers?
- How would you prepare for the baby's bath?
- How do you take care of the thermometer?
- How may you improvise equipment?
- What should you do in a case of tuberculosis?
- What is infant welfare?
- How is infant welfare work carried on?
- What is a Little Mothers' League?
- What are the duties of a school nurse?
- What are the duties of the nurse in connection with the giving out of working papers?

CHAPTER XI

MENTAL HYGIENE

BY H. G. MATZINGER, M.D.

In primitive times, when life was simple and competition did not exist, when there was room for everybody and it was a comparatively easy matter to obtain the necessities and comforts of life, there was no need for mental hygiene. But as soon as people began to live in larger groups it became increasingly more difficult to live and the problems of the individual became more and more complex. Essentially they did not change much, but there was less and less freedom in solving them, because there were others in the same quest whose interests had to be considered.

Now as then these efforts resolved themselves, in the last analysis, into the acquisition of happiness, which means primarily enough to eat, a comfortable home and as little interference as possible.

As life became more complex there was less freedom, less happiness, with a growing number of people whose claims had to be considered and so there came a need for a faculty of adjustment to the ever-increasing difficulties which blocked the way. Thus it happened that the very growth of what is called civilization, far from making life easier, in reality interfered with freedom, made life much more complex and created a need for the individual to fit himself easier and more satisfactorily to the difficulties which surrounded him.

Just as physical hygiene assists in the maintenance of

physical health in the midst of all sorts of possibilities of disease, so mental hygiene teaches the individual how he may adjust himself most satisfactorily to the life conditions in which he happens to find himself and thus to attain the highest degree of happiness, with as little danger of mental disorders and conflict as possible.

It stands to reason that mental hygiene has a larger import for the adult than for the child, but fundamental training for the happiest adjustment to life conditions has to be begun in childhood, if the best results in character development and usefulness are to be attained.

The career of many a child is ruined by failure of parents in properly assisting it to fit itself to its environment. A little reflection will show that the child is seriously handicapped in meeting these requirements from its very entrance into life. It is born into home conditions and discipline which are the result and outcome of ages of progressive development in family life. Its great-grandparents had no such demands made upon them when they were infants, as the modern child is required to fit itself to. The difference between their child-life and that of today is vast.

Take for instance the simple matter of clothing, which very early becomes a real test of its ability to adjust itself to the standards of the family. It must not do the very things which it naturally desires to do because of the clothes and the taste of the mother or other members of the family with whom it is obliged to live. Early it must learn to respect the rights and comforts of others. It must not take what it has a liking for, nor must it romp nor shout when others want quiet. At every turn it meets with restrictions, many of them normal and important, but all calling for the development of re-

straint and adjustment which would try and irritate a grown-up.

The demands of education are also vastly more serious than two generations ago. The modern highly organized and scientific methods of getting an education make very early demands upon the child. All too frequently the intellectual training of a child is begun at a very tender age when the physical development is much more important.

These conditions with so many others make child-life very complex, and there is from the very beginning a real need of mental hygiene if the child is not to be discouraged and embittered and its outlook upon life warped. It is an established fact that much of queerness and strange conduct, as well as the failure of normal character development, are the result of failure on the part of the child to adjust itself in a normal way to its environment, and in this the management of the parent is often more to blame than the child.

It must be admitted that many children are handicapped by poor heredity, but even so, there is all the more need for thoughtful assistance in the trying times so common in the life of a child, when it is called upon to fit itself in an easy and normal way to whatever seems hard and troublesome.

The normal child and not infrequently the one not overburdened by heredity is far more likely to develop a healthy mental attitude towards its surroundings by its own efforts, wisely assisted and directed by the parent, than by any amount of precept or other well-meant activities of the adults with whom it has to live. We can not get away from the fact that nature is able at all times to obtain better results if she is not hampered too much.

The greatest assistance we can give a child in the formation of a type of character which will enable it to get along without clash or failure in any situation which may obtain in its life, is to develop its own resources to the fullest extent, to find out what the child's stock in trade is as to natural equipment. It must of all things have abundant opportunity to come in contact with external conditions, otherwise it can not reveal itself.

One of the earliest accomplishments of the infant is the acquisition of consciousness of its own separate existence, apart from other people and things. This is usually a simple process, if the parents are not too eager in guarding the child and in anticipating all its wants. First the child becomes tremendously interested in its own body. It examines its hands and feet and other parts of its body whenever opportunity presents. It should have much time for this, in order that its interest may soon be transferred to other things. If left to itself with sufficient leisure this is soon accomplished, and the child announces the fact by calling itself "I" and not by the baby name which the parents use. This ability to clearly distinguish between the "I" and the "not I" is a very important step in the mental life of the child and the development of full consciousness. The greatest mischief is here done by keeping the infant constantly occupied and handling it too much.

As soon as the interest is transferred to the environment the child further increases its stock of ideas. It must be remembered that the number and kind of ideas which the child manages to accumulate determine the kind of judgment which it will show. It is manifestly important that as many right ideas about the outside world should be acquired as it is possible to do, in order

that the child may learn to fit itself most fully to its environment.

Here too it becomes important that the child learn early to distinguish between "mine" and "not mine." How easy and common is it that the child does not get a fair chance in this. The parents spend hours in guarding him and planning for all his waking hours. All sorts of fancy toys and so forth are thrust upon him so that he is robbed of the chance to get experiences of his own. He gets everything he cries for, and as a result he emerges from early infancy with but a vague notion of what contact with the outside world normally brings in the way of experiences.

Unfortunately, the modern child is much too carefully guarded and protected during this period to get the right ideas, and in this imperfect state of development it is carried into the next stage, when it is called upon to begin to gradually detach itself from the parental supervision. Nothing is more important in the life and character formation of a child than this early detachment. Irreparable damage is done by postponing it. A great majority of the failures of individuals to measure up to the demands that life-conditions make upon them originate here. Yet how common it is to see well-meaning parents endeavor in every way to put it off and to prolong the dependency of the period of early childhood.

The normal child shows a desire for this independence by revolt against parental authority and by freedom of action whenever opportunity presents. Simultaneously it sublimates its desire to be mothered into a sort of chivalrous protectorate over its mother. It is a common mistake of parents to misinterpret this rebellion, and the natural evolution of the child is disturbed and made

difficult by intimidation and unjust restraint and punishment.

If the evolution of the child-mind is normal and unhampered, he now shows a great desire for omniscience. He inquires into everything, he wants to know "how it works," and every opportunity should be given to gain this added knowledge about things. It is usually interpreted as meddlesomeness and his desire to show superior knowledge to that of the parents, unfortunately, brings him into conflict with them, that results much too often in his being misjudged and injudiciously curbed. So often this is the beginning of a surly, shut-in personality, which ultimately results in a feeling that everything is wrong and that no one can be trusted.

Of all the periods in a child's life this is the most critical and calls for most sympathetic and resourceful management. Fortunately, its requirements are to a large extent met by normal and plentiful intercourse with other children of the same age. Many of the finer traits of manliness and fair play originate in the rough and tumble adjustment of child play under normal conditions. The attitude of the parent to the difficulties which arise, no matter how petty they may be, is of the greatest importance. A certain judicious "hands off" policy is most valuable in accomplishing independence and resourcefulness and in paving the way to a wholesome detachment of the child.

There is another feature, and one of very great importance, in the evolution of the child mind as well as of his physical development. This is the matter of sex. It does not require much reflection to become aware of the fact that the most important function of the living organism is to reproduce itself, and so to aid in the continuation of the race. All activities of the human being

have no better object than to make possible a more satisfactory and more useful life for his descendants. Better home conditions, better educational advantages, better prospects for a happy and successful career for the child.

Physically all the development is directed toward maturing the best possible physique for that epoch in the evolution of the body which we call puberty. Everything becomes secondary to the growth and full development of those parts and organs of the body whose only use is reproduction. False modesty and prudishness have interfered with the full realization of this on the part of the parents, indeed it almost seems as though many parents had lost sight of it entirely.

In the normal child, with normal opportunities, the love, or sex-feeling, first shows itself as the greater attachment of the girl for the father and the boy for the mother. This is often so marked that it leads to poorly disguised partiality. This partiality is, of course, to be avoided in every way possible. Before long a change is noticed and with the growing detachment of the child its love and affection becomes what is called homosexual. In other words, there is now shown a very strong attachment for individuals of the same sex. A boy will have a boy friend for whom he will sacrifice anything, even displeasure of the parents. A girl will have a girl friend with whom she wishes to be whenever there is any free time, whom she emulates and who is the only companion who will satisfy her. Of course, childlike, this imperfect love attachment may and does change often from one person to another, but it is always some one of the same sex. Now when puberty approaches there is a more or less sudden reversal of this love or sex feeling, and it becomes heterosexual, that is love for the opposite sex appears, with a complete change in the individual from

being an overgrown child to a desire to be grown up.

The normal child has little, if any, trouble in passing through these changes, but very frequently unwise and prudish methods of parents and nurses or other grown-ups, especially those grown-ups with abnormal sex inclinations and views, lead the growing child into thinking about its sexual parts as something to be ashamed of. By this and by constant whispering and mysterious admonitions and injunctions, the child-mind becomes centered on the matter, and being naturally in an investigating attitude towards everything, evil thinking and evil practices often develop. The entire matter of sex should be dealt with in an open free way, whenever it comes up in such a way as to require attention, by the parents, and should never be left to any other person, not even to the physician.

The accidental exposures so common in the home child life, up to let us say the tenth year, should never be treated as indecent, but like the ordinary things which the child should learn not to do, because no one else does them. In this way we avoid the possibility of making the matter prominent in the child-mind and thus avoid the danger of opening the way to unnatural and abnormal sex developments.

Children's nurses and the regular nurses should bear this in mind, for it is they, more than the average parent, who are most likely to err in this important matter.

So far we have been concerned with the normal child and the most important life conditions which call for guidance in adjustment or mental hygiene. The problem becomes much more complex, however, when we are dealing with the abnormal child. Unfortunately a large proportion of children everywhere are more or less abnormal, physically and mentally. An altogether reliable

investigator has estimated that 75 per cent of all school children in the United States are not entirely well. Eyes, ears, teeth, stomachs, feet, backs, skins, etc., are the seat of trouble of development as often if not oftener than of disease.

As to mental abnormality no trustworthy figures can be given, for the reason that the tests which can be applied do not give the same results with all investigators; and for the further reason that, after all, the best criterion of a normal mental equipment is the manner in which an individual fits himself into the social and economic conditions of the group in which he lives. It is at once apparent that the standards of reaction or conduct differ widely in different communities and different walks of life. If a child is born into a group in which the rule is that at the age of four it knows whether it is a boy or a girl, can name ordinary objects, and can repeat sentences of three or four words, and it fails to be able to show such progress, we have a right to assume that something is wrong.

There are, of course, delays in mental development which are due to such unfavorable conditions as ill health, but the normal child soon fills up the gap when it gets the proper chance. But, unfortunately, in many children the development of the intellectual faculties is backward from the start and continues to be so all through the period of life in which the mind should reach its normal growth. Such children do not only fail to keep up with their school studies, but fail to develop the proper moral sense, the knowledge of right and wrong, of responsibility and of justice, and all through their further life they, consequently, show lack of judgment.

It is not saying too much to state that the delinquents,

paupers, criminals and prostitutes belong to this class of individuals who never get the right ideas of life because of lack of mental equipment, and so are constantly in conflict with society and law and order. They are usually called feeble-minded and can be detected in childhood because their defect shows itself very early in failure of acquisition of the ordinary knowledge of the average child. If their difficulties are met with patience and the most made of the stock of mind which they have, much can be done with such children. They need especially to be guarded from discouragement, misunderstanding and temptation.

There are many degrees of feeble-mindedness. The higher grade in which the defect is not so marked are often called *morons*. Their defect shows itself more in the way of instability. If conditions of life are favorable and everything goes well, they do well enough; but, when difficulties arise they are found wanting in the ability to adjust themselves to the adverse conditions and they then do the antisocial thing. Very often they do not get the proper assistance to regain their balance, and discouraged and out with things, they now follow the course of least resistance and become a menace to society.

Many of them make up the large group of so-called ne'er-do-wells who have constantly to be assisted to get along at all, while others run the gamut from delinquency to crime. It must not be forgotten that among this feeble-minded class there are a large number of individuals who are not altogether deficient, but may show peculiar brightness and aptness at some one faculty. To this group belong the infant prodigies, who while unable to keep up with normal children in their mental development, nevertheless show almost wonder-

ful capacity in some one direction or other. Here you have the musical genius, the wonder at figures, and so forth.

A safe rule to go by is that the normal child is the least conspicuous child, because it is at all times able to fit itself to surroundings and conditions in such a normal and satisfactory way that it is not noticed. We take special note only of the unusual and the exceptional in children as well as in grown-ups, and the same rule applies to them.

We often hear and read of the menace of the feeble-minded, and there is a common feeling that the real danger from them is exaggerated. This may be true in some localities and among some people, but the fact remains and is now generally admitted that the feeble-minded individual is a potential criminal in that it is so easy for him to do antisocial things. Moreover, he usually has to be constantly assisted and guarded to maintain himself. Often he becomes entirely dependent in his early adult life. Besides this, we now know that the bulk of feeble-mindedness is hereditary and so is handed down to future lives. The poor judgment of this group makes them prolific, and so their number is increasing out of proportion. Many of their descendants are illegitimate. In fact, the whole matter of illegitimacy has more to do with feeble-mindedness than with any other factor or group of factors.

The lower grades of feeble-mindedness merge into *imbecility*. The imbeciles themselves vary very much as to the degree and kind of their defect. As a rule they never learn more in all their developmental period than the average normal child knows when it is six or seven years old. The lower types do not accomplish as much as that. While the higher types may be able to reach

the mental development of ten years, in some intellectual capacities, their mental growth is not symmetrical, and usually the moral sense of right and wrong and the ability to protect and defend themselves remain primitive and infantile, no matter how many years they may live.

The imbecile group merges into the *idiot* group. In a general way it is fair to say that the idiot never learns more in all his life than the normal child knows at a year and a half or at two years. Often they do not even learn to talk more than a few words. Many of them have a language of their own, by means of which their parents are able to understand their simple wants. Many never learn to feed themselves, as ordinary children do, and, of course, never can be left to themselves because they do not learn enough to take care of themselves in the simplest matters. Idiots rarely live long, but, together with imbeciles, they make up a surprisingly large number of the population.

In the State of New York a fairly reliable census of these two groups, including of course many low-grade feeble-minded persons, shows as large a number as thirty-three thousand, only seven thousand of which are in custodial institutions. There is no reason to believe that the proportion varies in other states where a careful census is taken. It must be remembered in this connection that the existence of some such individuals never becomes publicly known. They are carefully secreted and cared for by the parents who are able to do so.

Of course this low type of mental defect rarely has descendants. They are never desired in marriage and are usually sterile, so they do not become a menace; but, they are a care and expense to the public in that an

increasingly large number of them sooner or later become a public charge.

Fortunately the lower grades do not live long because their viability is low and they are constantly exposed to accident and the development of disease. Many of the higher grades of imbeciles and the low grades of feeble-minded can, however, under institutional care and training, become partially self-supporting, under competent supervision, and so are not as heavy a burden to the public.

The whole matter of mental defect is being better understood each year. Private and public schools for backward children are increasing in number. Private and public institutions for the defective are also becoming more numerous. Everywhere public officials and organizations which have to do with correction and charity are realizing more and more that the individuals who come under their care are defective mentally, and require thoughtful training and proper institutional care, rather than punishment and financial support. It will not be long before every state will not only have sufficient and proper institutions for the care of this dependent class, but will also have its educational department equipped with the facilities and the means of early detecting the feeble-minded and so arranging the intellectual and physical training by proper mental and physical hygiene as to save many from failure, dependency and crime.

There is, however, little prospect that the number of mentally defective people will decrease, because it is hereditary, and there is at present no legal way of determining that they shall not have offspring.

Quiz

- What is mental hygiene?
- What is meant by adjustment of the child?
- What are the first accomplishments of the child?
- Which is the most critical period of child-life?
- What about the sex feeling of children?
- What is homosexual love?
- What is heterosexual love?
- How should the matter of sex be dealt with?
- How should accidental exposures be dealt with?
- How do we determine a normal mental equipment?
- Can feeble-mindedness be detected in childhood?
- Which are the degrees of feeble-mindedness?
- Is feeble-mindedness hereditary?
- What is imbecility?
- Why is institutional care needed for the feeble-minded?

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